

*The
Changing Year*

Anthony Collett





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The Changing Year

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THE CHANGING YEAR

BY
ANTHONY COLLETT

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IN January the sun and the heavens in which he runs are already preparing for spring. The earth may still be lapped in hard frost and chilling rains, but no foulness of the weather can destroy January's great gain, the longer light. The sun mounts higher above the mists of the horizon ; his shadows grow daily shorter and steeper, recovering from their lank prostration behind every grass-tuft in the December fields. With longer daylight come more active evaporation and swifter dispersal of the damps. There is a freer movement of the air, owing to the changes of temperature produced by the sun in his course. The dead stillness of mid-winter recurs more seldom ; and in overcast but rainless weather the roads and walls seem to dry more freely of themselves, and lose that peculiar sliminess which is the deposit of damp and stagnant winter air.

Even when earth is cold and backward, spring still gains ground in the sky. The light has a firmer quality of whiteness, and reveals a hundred quiet tones and contrasts of colour which were hidden or lacking under darker skies. The white rind of the wet ash-twigs shows clearly above the brown and purple copses on days of rain ; the colour of the dead grass on the hills grows paler under the arch

of cloud ; the wet road gleams white at evening, reflecting the increase of light, and the silver reeds of old dry fennel and cow-parsley stand newly conspicuous by its side.

The whiter light seems to catch from the walls of stone buildings a prevailing hardness and greyness, just as all roofs and walls in October seemed to exhale the same darkness as the air, itself in decay. This responsiveness to the season and the weather is particularly conspicuous in towns built of soft and crumbling stone ; but it is noticeable wherever the stone is not too hard or the air too pure. In London the sooty atmosphere makes red and even yellow brick susceptible in time to the same changes of the sky. The cloud-rack over the wet January street becomes charged with enough light to illumine a visible grey on the pigeons' wings shooting high above ; and the house-fronts answer to their own smirched doves as the ash-boughs in country copses to the wings of the wood-pigeons.

By February there is a further change in the face of the sky. The brownness of the winter storm-vapours has become a firm, soft grey ; their chaotic vagueness has been replaced by the even layers into which the year first parts the rack of winter before rolling it from the face of heaven. It is the opposite process to the thickening of mackerel clouds in the still skies of October, till at last no sunshine came through. Yet the February sky does not, as a rule, reform the rounded cloudlets of autumn, but draws itself into these long, even layers, between which, as through the openings in a southern sun-

blind, the increasing light of spring falls tempered on the fields.

This austere and empty lightening of February skies stands in sharpest contrast to the luxury of gathering darkness which drew us to the home fires in October, and filled the earth with fiery tints of decay and the turbulent autumn sunsets. Then the gloom seemed almost tangible, drooping in umber and sooty brown from the Atlantic rain-clouds over the lanes lined with yellow maples and crowned and carpeted with the elm-leaves turned to soot and gold. The sun sank in a gap between the cumulus clouds with the colours of a furnace mouth in the dark. In February the fierce colour has vanished from the boughs and the sky, and with it the heavy darkness. The tree-tops have the soft differences of purple and brown and grey that reveal the imminence of spring. When the sunsets appear as more than a fugitive streak of dun, they break into rose and green and orange that are very unlike the congested splendours of October, and recall the clear complementary tints that lurk at sunrise among the ripples of an Alpine snow-field. Day, rather than night, seems to prevail even in the coming of darkness. Night deepens out of a gathering grey-ness that keeps to the last some trace of the whiter spring light. In autumn and earlier winter the afternoon daylight was itself so soft and dusky that the night forestalled the actual time of sunset. Now the assurance of victory is with the light; and while spring seems yet far distant, we enjoy the faint but certain signs of its approach.

It leaps on us suddenly some morning in a wave of brightness from the south. The crocuses that have lately slipped through the mould yawn suddenly to the hot buzzing of the bees ; awakened butterflies dance in the corners of the lanes, where real heat now gathers and strong shadows are cast by the sun. Golden colt's-foot blossom stars waste land and the margins of ploughed fields ; and against the blue sky the boughs of the elms are seen to be red with bloom. Rooks flash in the sunshine as they pace in the drying river-meadows ; when they strike obliquely into the rays as they take wing, they sometimes look not black, but shining white. They toss about their nest-tops with high falsetto notes of ease and playfulness interrupting their solemn caws.

Night may return with frost or cold rain from the north, checking though seldom entirely suppressing the rooks' nesting, pinching the crocuses into slender spires, and sending the red and yellow butterflies back to sleep. But the year does not slide back to the dimness of the solstice ; even if many wet and sunless weeks follow, there is the light and the soft colours of the light.

NEXT to the strengthening of the light, the clearest sign of the year's advance is the increasing song of the birds. Only the week or ten days in mid-April when we first hear the cuckoo, sedge-warbler, and the other most vocal summer visitors, bring so regular and conspicuous an addition to our singing birds as the middle fortnight of February. In January the only constant singers were the song-thrush and the robin, which began to sing in August or September, and do not cease again, except temporarily in the hardest weather, until July. More rarely the desultory calling of the missel-thrush is heard, even in January, amid the song-thrush's indefatigable music: sometimes, indeed, the missel-thrush is to be heard even before Christmas, in the mild December weather, which seems spring-like except for the weakness of the light and the darkness of the unquickened air. As February progresses, the song of the missel-thrush is heard in constantly increasing power. The blackbird is a later and less zealous singer than either of the thrushes, and loves best to wait for the coming of full spring before abandoning himself freely to song. But he is almost always heard before the end of February, in the morning or at sunset oftener than at midday; and now, when the trees are still unleaved and the

mounted singers can be easily perceived, is the time to learn to distinguish between the blackbird's and the missel-thrush's song.

The missel-thrush has so much of the mellowness and softness of the blackbird, that when its notes fall clearly from some distant poplar crown, the ear dwells arrested, and the listener is apt to believe that the blackbird itself is singing. Yet there are marked limitations in the missel-thrush's song which supply a sure distinction. Its phrases are shorter, broken and more monotonously repeated; and its voice has not the blackbird's compass, or that golden richness with which he turns it in his throat. Dwelling for a long time on this tall thrush's song, we seem to find in it a strange quality of ignorant wildness, which is lacking, by comparison, in the more skilled and tutored voices of the song-thrush and blackbird, though present also in the song of the moor-blackbird, or ring ouzel, of the fells.

Wood-pigeons utter constantly their cooing notes, which we have heard at intervals since some soft morning in December; and with their spring song they practise their beautiful spring flight, tossing up with a clap of their wings from a high bough, and floating down in a curve to a new perch. Now, too, they fall to fighting on the branches, sidling up and buffeting each other with the curved wrists of their pinions, while their white-rimmed eyes grow round as in surprise to find themselves so angry. So the heat of spring seems to kindle with eternal newness in all nature; the whole earth receives it as some-

thing strange from within, and it is less a transformation than a revelation.

By the middle of February the chaffinch is heard trilling from the oaks, and among the furze-sprays on the common the yellowhammer strains to gain his full summer song. It takes some days of practice, and of the impulse of kindling spring, before the yellowhammer can complete his trill with the two last plaintive notes. On the first day when he sings, he will attain it, perhaps, once in ten times. Chaffinches, too, often deliver their roulades in a scamped and imperfect form in the earliest days of spring; but at all times there is a great difference in their execution. This has made them the favourite bird of the London working man for the singing matches held between caged specimens. As the tide of spring mounts daily with the increasing light, it swells the bud upon the bough and quickens in the song-bird the passion which finds vent in song. On the same morning when the primroses open freely in the garden we know that the chaffinches will be singing for the first time in miles of sun-chequered copse. Nor is the change wrought by spring only a matter of external observation; for humanity feels the same incitement, and sometimes answers to it in the same way—by song. Under the firm striations of the February sky the crow-boy on the fenceless corn-lands, with his ninth spring tingling in his blood, shouts down the skylarks with his own cheery cacophony. A natural product of open-air spring vitality, the crow-boy's music is as welcome, and

in its way as tuneful, as the melody streaming from the upper air. All through the month the song of the skylarks gathers power; and when we see them spiring aloft and up-wind with that amazing effort of the muscles of voice and wing, we recognize how the loose flight of their winter flocks across the fallows was not, as it might appear, the fluttering gait of weakness, but the perfection of indifferent ease.

Starlings and hedge-sparrows have been heard at intervals for many weeks; and the great tit's clear spring call now contrasts with the softer chime of the blue tit. When the wren is challenging the universe from his ivied stump, and the linnet regains his first harsh song in the hedges of the same fallows where he was last heard piping in a still October noon, the roll of the February singers is complete. It includes all the chief song-birds which are winter residents in this country, though some of them may not be in perfect song till March or April. All birds have now assumed the full brightness of their breeding plumage, and there is an endlessly fascinating beauty in the perfection of their colour and gloss. Burnished titmice twitch through the inky pines; the rose-breasted bullfinch brightens the hedge of the garden, where he is the most beautiful, if the most unmitigated of pests; and birds which have no great reputation for beauty of plumage display at this time of year a purity and a delicate contrast in their Quaker hues which are scarcely less attractive than all the kingfisher's splendours. Even the black coot, bluff-built as a

Dutch barge, now displays a subtly marked gradation between his sooty head and smoky-clouded back; with the sharp contrast of the bare white plate on his forehead—the seat of his proverbial baldness—he is far from an ugly or uninteresting bird. There is a like delicate contrast of grey and olive-brown in the moorhen's plumage, and of other browns and greys in that of the hedge-sparrow. Yet the hedge-sparrow, at any rate, is often regarded as a very Cinderella among fowl.

St. Valentine's Day has been fixed by popular tradition as an appropriate date on which the birds are supposed to mate; and it is true that by the end of the second week in February there is already a visible tendency for the winter flocks, formed by many species, to break up, and for the birds to settle down in pairs. But the date is no absolute one, nor even very representative; it is too early for the central moment in the mating season, and not early enough to mark its beginning. Not only is there a considerable difference in the pairing time of different kinds of birds, but the date varies greatly among individuals of the same species. It is determined by the character of the season and the success with which each cock has been able to secure and retain a spot well provided with food and suited to the nesting habits of its kind. On the whole, it is a mild winter and an early spring, which tempt the birds to pair and nest the soonest. Yet their song, which is so essential a feature of the breeding season, seems often to be evoked more by the increase of light than of warmth. There is

sometimes a marked decrease in the song of all the birds of the garden when a spell of mild, dull weather succeeds brilliant days with a sharp morning frost. Their spirits are quickened by the light, but it is the softer weather which sets them actively to nesting. Even the missel-thrush, which often sings the more ardently and persistently the wilder the March wind blows, is not induced to nest the earlier by the turbulent weather which rouses it to such a passion of song.

THE land wind and the sea wind rage in England over debatable ground. Usually the moist, mild sea wind prevails; it blows in most years for twice as long as the east wind with its bitter dryness. But in spring the two blasts are more at an equipoise; there are years in which spring is spirited into England by the west wind blowing from remote islands of the ocean, and others in which it seems wrung from the east wind and the frost by main force of the sun. The softer and earlier spring weather is nursed under grey canopies of cloud and the darkness of the temperate nights; and when the first strong sunshine floods the earth in late February or early March, its landscapes are already tinged with tender verdure and with the bloom of moist fertility in twig and clod.

East wind springs come late, with the glittering sharpness of the polar bergs. When the sun of March beats upon a world kept naked by prolonged east wind and frost, it draws an exaggerated brilliance from every point of colour or reflection between the hazy horizons. Even the leaves of the glistening hollies are often clouded by the frost; but where their bare trunks stand clear above the hedgerow they flash like wet rocks before the moving eye. The ivy-bush glitters with a white

brilliance in the crown of the pinched hawthorn ; and where the wood-pigeon claps out from rifling its berries, the grey bars of its fresh plumage shine almost with the brightness of the magpie's patches of pure white. Along the south wall of the barn the orange lichen glows with a summerlike richness in the new warmth of the sun. The reflected rays already strike hot from the brick ; but the wall is no sooner in shadow than the icicles at the roof's edge cease to drip, and add a new layer to their length and thickness as the frost returns.

This conflict of spring frost and sunshine shows itself by roads and pathways, and by the fountains of lesser waters, in the casing of dull-white ice which grows day by day as the night frosts seal again the moisture outpoured by the sun. In the hollow hill-lanes the suspended drainage of the surrounding fields breaks out in periodic springs which flow only in the middle of the day. The sap in trees is flowing strongly upward under the pull of the sun ; and where there is an unhealed wound in a bough, the dripping life-blood of the tree forms an ice-cake on the barren lawn below. It is these cakes and smears of ice upon the face of the soil which are characteristic of long spells of frosty weather in early spring, when the alternation of brief thaws and swift-returning cold remoulds and redistributes day by day the mantle of some earlier snowfall. In the lambing-folds a slight fall of two or three inches is quickly beaten down by the feet of the skipping lambs, and forms a dry pavement of earth and ice, which is much healthier, for all its apparent rigours,

than the mire of rainy springs. While such slight snowfalls are still lying fresh and even across the undisturbed soil, the ground-feeding birds search out every spot where the brown stain of the earth shows through the cloak of whiteness and seems to promise them access to their food. Thrushes hop beside the trampled lambing-folds, and sparrows burrow in the pales of yellow straw that make the fold conspicuous across the whitened landscape. Hedge-sparrows search minutely in the brown furrows sliced by the farm waggons; and where a mole has thrown up his hill of fresh earth through the powdery layer, the footprints of many birds are seen converging upon it from the neighbouring thickets and hedges. When a deeper snowfall has covered every scar of the soil, and loaded the marshes to the very margin of the curdled pools and streams, the birds find their last support in the hawthorn and ivy berries, which in the mildest winters they hardly need to attack before spring is once more at hand. In such open seasons the value of these berries to many of the soft-billed birds seems comparatively small, since the trees are but little depleted by their inroads in brief spells of frost. But when there is a long spell of hard weather at the end of the winter they draw upon these reserves to the full, and the bushes are thoroughly stripped. Even the blackbird is driven to feed on the ivy clusters, when his most secret and sheltered hedge-banks are over-lapped by curving drifts; and the great half-tame wood-pigeons of the London parks are forced, in the

thick March snow, to snatch the berries from the same trusty bush, balancing upon its shaking head with unfamiliar labour. Many seasons may pass, and the provisions of nature seem useless for the purposes of her children ; but the rare year comes at last when the activity that seemed purposeless is fitted to its ancient need.

The full thaw comes at last in a flood of mild air from the south-west that sweeps away the tints of sullied opal from the noonday sky and relaxes the sere prints of the landscape. The earth repeats again the passing of its glacial age. The ice-crusts vanish from the bank-sides and the northward corners of the fields, leaving a bleached and withered carpet of grass and moss which expands, almost hour by hour, into new colour and vigour. Damp stains break out in the roadways, where the thaw sets free the icy particles mingled with the dust. As the frost melts out of the soil, and is succeeded by the mild, evaporating winds, the turf in the pastures becomes springy and the ploughed land plastic and clean. Along the southward hedge-banks, where the power of the noonday sun has for weeks been strongest, the scent of the new grass comes blowing in gentle puffs. The whole air is full of that subtle fragrance of the earlier days of spring which seems breathed from still leafless branches and naked soil, and to be more than half some quickening essence in the wind. The black gnats dance in troops under the thawing hedgerows, recalling the full heat and insect mazes of July. Even in the heart of the frosts the noonday sun would wake them to dance over the

snow ; despite their frailty of body, they are proof, in their light torpors, against all cold. Where a cloak of snow has lain for days or weeks together on the wheat-fields, a network of grooved pathways is sometimes laid bare on the surface of the soil, with spurs branching out to left and right like the channels of some system of irrigation. Secure beneath the snow that sheeted the field, the mole has been able to drive his hunting-paths along the level of the soil, instead of in his usual concealment beneath it ; and his quest for food at this level shows how the earth is kept free by a snowfall from the binding action of long frost. Unless he drives such galleries in vain, not only the hunter but the worms on which he preys must move freely at the surface of the soil.

As the west wind wakes the landscape to active life, the song of the birds, withheld through the weeks of frost, bursts forth in simultaneous chorus. In the hardest weather of late winter, as well as in its most dismal hours of cold and rain, the most persistent singer is often the hedge-sparrow, which develops at this time of year a pugnacity and insistence curiously in contrast with its normal quietness. But while, in a whitened landscape, the hedge-sparrow reels out its thin music from the naked hedgerow, it seems only to emphasize the absence of the other singers of early spring. When spring has been long delayed their songs break out, on a day of west wind and sun, with a suddenness of unanimous acclamation which is rare on English soil. The spring of our Atlantic climate comes to

us most often with foretastes in the heart of winter and distant hints and promises which are welcomed by the song-birds one by one. But when by a freak of atmosphere, we are merged in the continental winter, we lose those sea-borne prophecies of months to come and the birds' responding signals. Spring comes with mainland suddenness, and is answered by their voices in one peal.

Though fine March weather seems full of colour, it is curiously local and concentrated. Most of the brightness of the month comes from the power of the equinoctial sun on a naked landscape. By the end of winter most of the fallen leaves in the woods are matted together into a faint brown carpet, of the colour of withered grass, that is many shades paler and feebler than the nut-brown drifts lit up by the thin December sunshine. The gleam of green on the autumn-sown cornfields is not appreciably stronger than it was before the mid-winter frosts; and the dotted root-fields have been almost cleared by the sheep. From most of the pastures almost every tinge of green has vanished under the long succession of winter frosts and rains; and this is one of the greatest contrasts with the October and November landscapes, in which the watery autumn grass is often more vivid than the midsummer hay-crop. Where a long range of downs stands over a lowland landscape or the channel seas, their colour at this time of the year is a delicate fawn or tan that makes subdued harmonies and contrasts with the tints of the distant sky. If we stand upon the same sere hills, we see that though the underlying fibres

of the turf are green and thriving, and full of thyme-plants and other dormant blossoms, the taller blades and tufts are almost all colourless and dead. When the larks nest under the shelter of these dry locks in May, the new spring growth will have tinged the sward beneath them, and colour will partly creep back into many of the old, dry blades. But while the hills stand spread under the strong lights of spring, without any of its verdure, their colours seem less appropriate to England than to some sun-bitten landscape of the south.

Because of their very rarity the touches of colour that the March sun wakes in the fields seem doubly vivid. The lesser celandine has a liberal growth of glossy verdure; even before its bronze buds open into gold, it adds a lusty yet delicate beauty to the beaten mould by the marbled grey and green of its down-pressed leaves. But it is characteristic of the other flowers of March that they concentrate all their activity on the vital function of bloom, and are content to wait upon the general advance of the season for the unfolding of their foliage. They flash into the early strife of the year like blades stripped from their scabbards. It is not until the wind-bleached clods of March are crumbled and softened by the April rain that the cobwebbed leaves of the colt's-foot begin to unroll beneath its tassels of tarnished bloom. Round the fringe of all great cities the country seems to lay siege to the urban grime in spring, and to press home its healing cleanness much closer to the darkened core. In this annual attack the colt's-foot blossom is indomitably to the front.

By March, even in backward years, its golden circles, smaller and a little paler than the dandelion flower, can be seen strewn in profusion along the waste and arid fringes of the railways in the nearer London suburbs, and between the very sleepers on the line. Only the hardiest of plants could wring a living from that scoriac soil; yet the colt's-foot seems to find the railway ballast no less congenial a home than the baked margin of an Essex brickfield. It is, indeed, one of the most stubborn of all weeds; and where it once secures a footing in the garden, in spite of almost any suppressive measures, it will implacably reappear. Fortunately, however, it scorns high living as a rule, and prefers the stoical satisfactions of its barren clods.

There is the same isolated intensity of colour in the blossoms that are expanded on leafless boughs, to be mated by the boisterous spring winds. The extreme instance of this characteristic concentration and vividness is to be found in the minute crimson stars of the hazel, which pierce the folded bud to receive the dust out-shaken from the lengthening catkins. The catkins of the hazel, which begin to form before the leaves fall in autumn, are among the best-known signs of spring, as they droop loose and yellow in sheltered places from January onwards; but the bright speck of the female blossom, which contains the germ of the nut, is so small that it must be carefully sought for even on the bare spring boughs. Most other wind-mated blossoms of early spring are more conspicuous than the blossom of the hazel, if less familiar than its catkins.

When the sunlight strikes clearly on the broad top of a black poplar, its boughs are often seen tinged and tasselled with the "curious, caterpillar-like" catkins, so plentifully strewn on garden walks and town pavements after a night of March wind. The crimson flush of the elm's small but abundant blossom is even more conspicuous against a bright blue sky. Beautiful as is a well-grown elm at all times of the year, it is never more full of attraction than when its bare boughs are thickly beaded with blossoms and swelling buds, and full of the sedate activity of nesting rooks. The stages of the rooks' nesting and of the trees' development are closely connected as spring advances. Building begins when the enlarging blossoms are beginning to thicken the twigs against the sky. The eggs are laid and the blossoms open at about the same time—earlier or later according to the weather of the season and the sheltered or exposed position of the trees. By the time that the opening leaf is mounting from the low twigs into the windy tops the cries of the young rooks are growing loud; and where their numbers are kept down by rook-shooting, the fatal day arrives when the elms are in full leaf in May.

A more striking sign of the returning strength of the sun than even the increasing number of March flowers is the reappearance of the early butterflies. In a normal season it is in March that the peacock, brimstone, and small and large tortoiseshell butterflies first begin to fly regularly abroad on warm and sunny days. Male and female brimstone butterflies, with their contrasting tints of yellow, like the

colours of sunshine and moonshine, range endlessly up and down the sunny borders of the copses, with their strong yet dancing flight. The emergence of these butterflies has led to misconceptions of their entire life history, especially with regard to their appearances indoors at irregular intervals during the winter. They hibernate in the winged or perfect state, creeping into hiding in autumn much like the dormouse or the hedgehog; and the peacock and both the tortoiseshells frequently choose for the purpose some dark corner or cranny in a dwelling-room, a church, or any other building to which they can gain access. If all goes well with them, they will not wake between the September day when the gathering chill warns them to quit their blossoms and the bright March morning when they are roused by the returning sun. But in the English climate a day warm enough to wake them may occur at any time during their months of sleep; and the likelihood of such untimely resuscitation is much increased if they have crept into any building which is artificially warmed. Whenever the temperature of a room to which one of these butterflies has found its way in autumn is raised exceptionally high by warmth from indoors or outside, it is likely to respond to the stimulus, and to make a premature reappearance. There is thus no question of its being hatched at an unusually early date, as is frequently supposed. If it escapes capture as a rarity or freak of nature, in most cases it will find another resting place as soon as it feels the temperature falling around it, and may then sleep safely until

spring. But it is hardly possible for it to find natural food when it wakes at a time of year when all its blossoms have vanished; and if it undergoes many of these premature returns of consciousness it is apt to succumb. When a butterfly which has made its appearance in a room at mid-winter has once more sunk into slumber behind a book-case or in some other congenial niche, it is not easy to tell at first sight whether it is alive or dead. Even in its normal sleep it may look very lifeless, with its wings folded and the antennæ laid back between their edges. But if it is dead the proboscis, which is curled in front of its body like a watch-spring, will be rigid and brittle; while the least touch with a needle or grass-stem will prove its elasticity if the insect is still alive.

Four or five kinds of hibernating butterflies are seen abroad in spring before any of the kinds which emerge from the chrysalis at that season of the year. As they are already winged and mature, less warmth is required to call them forth than is necessary to complete the transformation of the incomplete insect within the shell of the chrysalis and to urge it to burst its bonds. Certain moths and other insects which are less dependent upon sunshine than butterflies are hatched throughout the winter; but their very independence of sunshine, or even of daylight, deprives their appearance of any of those associations of returning summer which are linked with the first sight of the tawny or golden butterflies hovering in the sunlit lanes and feeding on the new spring flowers.

Impatient to take a wider course, the brimstone vanishes now and again at the lane's high corner, or overtops the hedge-crown into the field beyond ; but the world beyond his oasis is still inhospitable and bare, and he soon returns again, pausing in a moment's arrest above the dog-violets, or hanging with hooked wings closed on the corolla of primrose after primrose. He last drained nectar from some scabious blossom of fading September ; and when we see him plunge his long sucker once again into the flowers, he appears a visible emblem of the endless succession of the seasons.

ON a hill-stream in early April the alternations of spring and lingering winter are swift and vivid. Half a dozen times in a morning the skies above the valley may be blackened and the hills whitened by a storm full of hail from the north-west or of snow from the north-east. The hail sings upon the water and rattles from the rocks; then ten minutes later the sun once more strikes hot on the sheltered channel of the river, a thin steam rises from the airless hollows, and the primroses shine more brightly for their bath of sleet.

Unlike the earthy banks of lowland rivers, where the wet soil makes spring vegetation late, if luxuriant, the rocky shores of the hill-streams form nurseries for the earliest and most delicate blossoms. Where the rock-walls above the water are green with liverworts and mosses, clumps of wood-sorrel lift their sensitive trefoil leaves and hang their veined bells in the chequered sunshine that falls through the naked oak-boughs. Small primrose plants with a few large blossoms cling to rifts and ledges among the moss, reflected on the stiller water; and their pale yellow is brightened by white anemones and here and there by the flower of the barren strawberry. The small green blossoms of the moschatel stray down the mossy slope from the hazel roots

in a copse or thick hedge above ; and where a seed of rowan or birch or holly has sprouted in a narrow crevice a little shrub hangs out its miniature boughs. Here and there, where the slope takes the drainage of a hillside, there is a slow drip of clear water from the mantle of moss and ivy into the stream below. Drops gather on the hanging moss points, swell till they grow heavy, and follow each other into the stream. Where the ripple at the rock-foot reflects the sunlight it runs and flutters perpetually on the damp green moss of the wall. The idle dancing of a sunbeam seems always very far from human affairs ; and the breath of fairyland is over all these hanging gardens by the stream-side, with their span-high hollies and birches, and anemones trembling to the spray. In the seclusion of the mossy hollow, with the stream's sharp murmur cutting off the sounds of the world, we easily lose touch with our familiar standards of size. The anemone blossom commands the narrow horizon like a pine on a mountain crag ; and where a small bronzed beetle climbs over and under the mosses, we have a new perception of the detail and variety of the landscape and the length and labours of his way.

Few human eyes but those of the wading fisherman ever enter these stream-side rock gardens, cut off by the overhanging rock-faces and the amber stream. Merged thigh-deep in the river, he gains a new standpoint in other ways. He sees the surface of the water and the banks at its side from a new and obtuser angle of vision than when he walks on

dry land ; and so long as he does not make a great disturbance, the birds and animals of the stream-side often overlook him altogether, or feel no fear of his unfamiliarly truncated figure. Now and then, even by daytime, an otter may cross the river in front of him or appear for a moment under the overhanging roots at the stream's edge. On the wooded reaches squirrels often cross the ground from tree to tree, run with their red tails carried sinuously behind them up the grey trunks of the oaks upon the banks, or sit upright and grunt defiance upon an upper bough with their tails erect. Sometimes, where a larch or other tall tree has fallen and bridged the chasm of the stream, a squirrel will run lightly across, hunt for a little while among the leaves of the steep bank beyond, and return as gaily as it went. By the side of the stream, along the beach of sharp sand under the copse-roots, the slenderer and fiercer stoat comes cantering in quest of a nest of young birds or the scent of a rabbit upon the bank. Undulating its head from side to side with the gesture of a snake, the stoat shows in every movement its innate lust for blood. As it hunts along the edge of the spring thicket, it seems like the very spirit of evil, for all its nimble beauty. Yet, deep in animal nature the roots of good and evil are inextricably intertwined. The fierceness which makes the stoat the most insatiable of killers takes another shape as the undaunted courage and comradeship which sometimes impels a family of stoats to make a joint assault upon so formidable a foe as a man, and will even make a single mother

attack a man in defence of her young. Not all our sympathy is owed to the rabbit shrieking in the covert, or the hedge-sparrow which sees its young devoured and will not be comforted. When the idle sunbeams and the dropping water have taken our minds beyond all thoughts of good and evil into a soulless fairyland, the stoat on the beach brings them back again. Mysterious as is the beauty of the hidden water-garden, there is a mystery much nearer to us in the red body rippling along the strand.

Frogs spawn in March and April in the stagnant channels cut here and there in the more level meadows by floods. There they deposit the masses of glutinous eggs which hatch a little later into swarms of tadpoles; and thither chiefly resort the long, green grass-snakes, which to a great extent live upon frogs. When they bestir themselves in the first warm days of spring, these large but harmless snakes are often to be met with about the river-banks, and will plunge boldly in to swim from shore to shore, breasting a strong current bravely, with heads and yellow throats raised above the water. Both grass-snakes and frogs are seen less often by the steeper streams plunging down from the moors. There the adder is not uncommon on the dry slopes of heather and bracken above the stream; and where the stream flows through copses and thickets, toads come down to spawn in the still pools at its side. Toads drop their spawn in long strings, easily distinguishable from the shapeless masses of frog's spawn; it is often found in April

in the watery cracks between the up-tilted strata of the rocks. The increase of toads is checked both by flood and drought. Strong floods wash the strings of spawn out of the shallow pools ; and it is probably often devoured by trout when it is washed into the main channel, like the chub's spawn in the lower reaches of the stream. In a droughty May the pools dry up, and the tadpoles perish, as sometimes also happens to the frog's tadpoles in the muddier pools and channels in the meadows. Both toads and frogs must lay their eggs in water ; but while frogs haunt pools and wet meadows all through the summer, toads often travel far from their birth-place to damp and shady spots. In spring they often fail to hit upon a pool which provides safe shelter for their spawn and tadpoles ; and this is apparently one reason why the frog is the much commoner species.

The alternations of sunshine and cold storms have an immediate effect both on trout and on their insect food. On the rockier streams there is seldom any abundant hatch of fly in spring, such as is common on many rivers which flow over broad stretches of gravel. March browns drift above the rougher hill-streams in a thin sprinkling, rather than in the dense swarms which will suddenly appear on the surface of level and gravelly northern streams in a few minutes of warm sunshine on even the bitterest days. The hill-trout pick up their strength and substance little by little on a mixed diet ; and their steady recovery after the scarcity of winter is as noticeable as that of a human con-

valescent. At first they will not face the strong water in the main current of the stream ; they lie in the deep pools and stiller eddies, where their strength is diffused or chiefly spent on the surface. In the straighter and more even reaches, where there are no such refuges, they shrink into small holes and hovers under the bank, and catch at food that the current washes within their reach. Gradually the warmer spates bring down a more liberal supply of the worms and grubs that stir in spring weather, and enough fly hatch in the intervals of sunshine to give them a chance of gaining weight and vigour from this most fattening food. Then they push out into the stronger current, at first taking up their station in the tail and at the side of the runs. A week of warmer nights and days brings the sandpipers to the shingle-spits, and the willow-wrens abundantly to the copses ; and now the black pools and the holes under the bank are almost deserted, and plump trout are posted in the stronger water. Their increase of flesh is as noticeable as their change of habit. Before the cold storms and frosty nights are over they are equally responsive to each transitory burst of sunshine. Broad clouds borne southward and sifting snowflakes keep the day to a wintry temperature, and the trout are absolutely inert ; none larger than a salmon parr will rise. Then comes an awakening, when even a quarter of an hour's sunshine strikes a gleam and a sense of spring to the depths of the peat-tinged pool ; while the sun lasts the trout rise steadily, if scarcely with freedom.

The sun withdraws, its rays die out of the pool, and the winter apathy returns. The fly at this time of year are even more responsive to sunshine than the trout. When an April night brings two or three inches of snow, as happens now and then, a sprinkling of blue duns will appear upon the water in the midday sunshine, before the snow has quite vanished in the quick spring thaw, and while the grey snow-broth still keeps the trout stubbornly inactive.

Many kinds of insects are attracted in early April to the scented blossoms of the willow; and the insects attract the birds to the same boughs. Often, while we fish a pool overhung by one of these trees, a small party of birds will gather in the golden blossoms and search busily overhead. The blue, marsh, and coal tits are in earlier weeks the most numerous species in the willow-boughs; and the blue tit's bright head makes the most vivid picture amongst the yellow blossoms under the sky. After the willow-wrens come, the willow blossoms seem to supply them with a great part of their food, while the still naked boughs of most other trees offer them small hospitality. Once the trees are in leaf the restless and secretive willow-wren is seldom seen again so easily. With its quiet tints and delicate form, it makes a striking contrast to the sturdy bodies and bold markings of the tits; and its notes are as delicate as its shape. The blue tit's note, like a little bell shaken, is the most musical of all the songs of its tribe; but it rings metallic and mechanical after the liquid cadence

of the summer warbler. The titmice are at home in any weather; but the slender willow-wren is almost as pitiful a sight in a black squall of hail as swallows in east wind and frost. Long-tailed tits swing among the blossoms with their soft plumage of pink and black and grey; and now and then a wren spins up from the lower bushes and hunts fitfully for a few moments among the flowers. But the wren is never at home very far from the ground; and soon it drops down again to the sycamore roots that fringe the water, and slips to and fro in their labyrinth in silent concentration, with an occasional spurt of song.

The water-ouzel, or dipper, is in shape like a larger wren, and links it to the thrushes. It is as characteristic a bird of the hill-streams as the swallow of the farmyard or the gulls of the sea-washed crags. It remains all winter on the stream, and begins to nest long before many of the other birds return. Its large, domed nest is often hidden deep in a recess of the roots and rocks beside the stream, or behind the dripping woodwork of a mill-wheel. Sometimes it is fixed to a rock above the water, hidden from the shore, but with no concealment on the side from which no enemy is expected. Then, as the fisherman wades day by day past their rock, the dippers' architecture can be watched through all its stages. Sometimes the crust of wet moss is fixed to the scantiest depression in the rock, almost with the tenacity of the house-martin's mud nest under the eaves. It grows from an oval foundation, gradually raised and curved over until

a pent-house overhangs the lower cup, and is completed with a lining of dry leaves. Grey wagtails return at the beginning of spring from their winter quarters in the lowlands, and nest almost as early as the dippers. They build in very much the same places, but they make an open nest, and keep it beyond reach of dripping water and dashing spray. Grey wagtails are fondest of a hollow in some mantle of ivy on a rock, or beneath an overhanging cornice of roots at the top of a crumbling earth-bank by the river-side. Their sharp twitter and the flash of their yellow tails are constant features of the stream-side through all the spring; and on any reach of the stream where the wagtails build, it is seldom long before a thin note cuts the murmur of the water, and the dipper whizzes past, like a sable kingfisher.

By the time the first summer migrants arrive, the birds' wandering movements take a new and steadier purpose. Migration has been more or less actively in progress through all the cloudy months since the disappearance of the last swallow in October; its impulse is not confined to the two great movements in spring and autumn, as is suggested by the popular division of English birds into resident and migratory kinds. Yet, by the time that such home-keeping species as our native rooks, or the thrushes and robins of well-furnished gardens, are nesting under the bare March skies, there is a striking change in the preoccupations of most of the birds to be seen on an afternoon's walk. The wandering flocks which drifted eastwards or westwards across the country before the frosts and thaws of midwinter have now almost all disappeared; and although the woods and gardens are still only half peopled, there is a steady concentration of small groups and single pairs of birds into their summer nesting quarters.

The last of the great winter flocks to linger into April are often those of the fieldfares massing in some bold wood, or among the trees on some wide, conspicuous hillside, before crossing the North Sea to their summer homes. These huge and noisy

gatherings, sometimes numbering many hundreds or thousands of birds, recall the more familiar autumn concourses of swallows and martins on the church roofs and telegraph wires, and are marked by the same air of restless expectancy. Strings of birds fly upward with uneasy chatterings, and then return to their perches, conscious that the moment is not yet come. While the fieldfares delay to leave the mild English fields for the later and colder spring of the Baltic pine-forests, the birds which nest in England are already streaming into the woods and hedgerows. For several weeks before the coming of the swallow and the cuckoo makes a public proclamation that the birds' spring movement has begun, less conspicuous birds of passage are pressing, like the tide among the sandbanks of an estuary, into their summer homes.

The curlew is classed among resident birds ; but all through autumn and winter it vanishes as completely from the high inland moors where it breeds as if it had joined the swallows in Africa. The curlew departs about August to the seashore and oozy estuaries, and may travel onwards into the south ; and its return, with its wild cry, to the hail-streaked uplands is as distinctive a mark of spring as the piping of the nightingale under the sallow-blossom in Kentish copses. In the valleys of the Lake Country even such familiar birds as the song-thrush and greenfinch are summer migrants like the cuckoo or the swallow, though they are absent for a shorter time.

The movements of the species which do not

wholly leave England in winter are naturally more difficult to trace than those of the summer newcomers. The cry of the first cuckoo is an event of interest to two or three parishes; but the arrival of the main body of nesting larks or linnets is far more difficult to observe. It can often only be inferred from a considerable addition to the numbers present in their haunts, or from the sight of birds which are obviously new in their surroundings. Parties of common water-wagtails are often to be met with in April, pressing forward along a river-bank, or across lawns and pastures, with the same air of unfamiliarity mingled with curiosity which marks parties of human tourists in a foreign town. These migratory parties of wagtails are all the more noticeable, as the comparatively small number of water-wagtails which do not leave their breeding haunts in winter cling very closely to a particular nook or corner, such as a well-sheltered bend in a stream or a farmyard pond. Often a water-wagtail will attach itself for the winter to a human dwelling, like the robin, though it will usually desert it again in spring for the side of a pond or stream not far away. Many of the smaller ground-feeding birds are often attracted on migration by the green plot of a garden lawn; and occasionally a flock of many dozen migrant wagtails will come stringing over the hedgerows and copses, and rest and feed for a few hours on the moist and well-stored turf. The owners of the lawn may be not a little surprised to see it apparently chosen as the site for a parliament of fowls. Both in spring and

autumn the yellow wagtail or cowbird—a summer migrant—will visit a garden lawn for a meal, as it were, between trains, darting across the dewy morning grass with its flash of yellow beneath a back of olive-green. The grey wagtail may often be seen by the rivers of midland districts in March and early April on his way from the dykes and rivers of the low country, where he spends the winter, to his breeding grounds by the steeper hill-streams. Most chiffchaffs and blackcaps migrate to more southern lands; yet some linger in the south-western counties in midwinter. Tennyson is true to nature when he makes the sea-blue kingfisher a “bird of March” on many smaller streams, which it leaves in winter for more open waters, and seeks again in spring; and even so retiring and home-keeping a bird as the moor-hen has its own spring migrations. In April it is not uncommon to see a moor-hen flying heavily across the middle of a waterless field at a height of fifteen or twenty feet from the ground, or resting, to recover itself for a fresh plunge into publicity, in a holly bush in a garden shrubbery. Though a retiring bird, it is also pugnacious; and when it meets strange company on its travels its combativeness sometimes leads it into curious affrays. It has been seen to keep an irate magpie out of its own newly built nest, which it was using (as barn owls will in winter) for a convenient hiding-place.

The spring tide of migration is at its height about the third week of April, when the arrival of many birds of summer opens a new era in the year. In

the swift unfolding of a normal spring there is by that time abundant cover to conceal them in the thickening hedgerows and larch woods, and among the willows budding by the water-sides. But the migrant birds that arrive in the earliest days of April, or before it, enter a world still almost empty of sheltering verdure, and their presence is often overlooked from the very bareness of the fields into which they come. In the south and west of England the chiffchaff may almost always be heard among the still naked branches in the last few days of March, and now and then a good deal earlier. A bird so small and brown and lurking is always likely to escape notice if it does not sing; and when March goes out under windy and snow-laden skies, the chiffchaff may be haunting its accustomed copses for days before it is observed. Only patient search or pure chance is likely to discover the slight brown shape when it is still so rare and so silent. Monotonous as is the chiffchaff's double note, it has the true elements of sweetness and softness which distinguish the voices of the summer warblers, and it chimes in the subdued March lane with a tone which is new to the year. The song-thrush, robin, wren, and hedge-sparrow all have the keen, spirited tone of birds which have dared the winter and not been dismayed; and though this indomitableness in their music is unceasingly full of attraction, there is a softer strain proper to summer, which the chiffchaff is the first small bird to bring. The easy, lazy blackbird sings, indeed, the true warm-weather music, and waits as a rule for warmer

weather to sing in, with a softness which the song-thrush and robin despise. But the blackbird is large and strong enough to take a natural confidence from the uncertain warmth of February sunshine ; and no smaller bird finds spirit to sing the same soft strains until the equinox is passed.

The chiffchaff is heard more often than it is seen ; the opposite is true of the wheatear, which comes to us at least as early. While the chiffchaff haunts thick hedgerows, copses, and gardens, the wheatear is a bird of wide downs and commons and the stretches of short turf on the mountain-side. Thus they cover between them almost as wide a range of country as is possible for any two birds with strong local tastes and habits. But while the wheatear appeals chiefly to the eye, there is no lack of music or interest in its song when it is heard in the early days of the season, while the bird is still seeking a mate. The song has much of the tone of the first warblings of the song-thrushes in early autumn, but has an execution and a variety which they lack. The variety and novelty of this song are as conspicuous as the bold display and posturings with which it is delivered ; and it seems to be based a good deal on imitation of the songs of other birds, which has always a peculiar fascination.

For a little while after the chiffchaff and wheatear appear, the tide of summer warblers flows on slowly. But before the middle of April they are followed by a great wave of willow-wrens and many other less numerous birds of summer ; and by the time that the swallow and the cuckoo have peopled the mea-

dows, the throng of summer migrants is changing the aspect of bird-life through the whole of the land. Chiffchaffs grow daily more numerous; and now they no longer search silently for insects among the whipping twigs of the lower boughs, but ascend and sing in the tops. One of the surest places to find chiffchaffs singing is where some sheltered slope of larches breaks green in the sunshine and mild wind; and here in the second week of April they are joined by their near relatives the willow-wrens. Much as swallows were half believed even by Gilbert White to awake in spring from hibernation at the bottom of ponds and streams, it might be thought that these delicate warblers lay hid all the winter among the thorns and dry leaves beneath the larches, and came forth when the boughs grew green in the sun. Swallows on the pools and willow-wrens and chiffchaffs in the larches seem as native to the life of the spot on warm spring days as the young shoots on the bank or boughs; but the birds in both cases are drawn by the emerging insects. Where the fragrance of the budding larches streams in the April sunshine, specks can be seen floating against the sky and creeping on the tufted needles. These are minute flies hatched by the warmth of spring. The main body of the chiffchaffs and willow-wrens arrives when their food is ready for them, and the verdure to harbour it is budding; and the same correspondence can be marked all through the migration season, except in the most backward or irregular springs.

Whitethroats and sedge-warblers begin to arrive

in the great general wave of migration which sets in before the middle of the month, and brings us most of the summer migrants in hot succession. The whitethroat is a warbler unusually tolerant of dry and dusty spots for that verdure-loving family, while the sedge-warbler haunts the water-sides. But they invite comparison each year by a common quality of chattering obtrusiveness in their music, and by the punctuality with which they appear in their respective haunts at the moment when there is just enough verdure to hide them. Both are abundant and widely distributed birds, and we are seldom far from the voice of one or the other wherever there is a luxuriant undergrowth of verdure. Whitethroats are especially conspicuous in low hedges mixed with briars and nettles, and in the patches of scrub which often border the road. When they arrive, the new tufts on the brambles are expanding, the quicks are breaking out into green, and the nettle-shoots are beginning to rise into the foliage and screen their old, dry stems. Among this still scanty cover the whitethroats slip with a mouse-like motion, occasionally tossing into the air above the thorns, and continually pouring out their chiding, irregular song. When they first come, their last year's nests are still conspicuous among the sparse verdure; but the new growth shoots so quickly that by the end of April they have new nests nearly finished in safe hiding. When the weather after their arrival is uninterruptedly dry and warm there may be eggs in the hair-lined nests before May Day. Sedge-warblers in April play

much the same game of hide-and-seek among the stream-side vegetation, and pour out a still more restless and persistent song, with the same hint of sparrowlike abusiveness. But the flags and valerian and willow-herb spring more slowly than the nettles and red robin of the roadsides, and sedge-warblers do not begin to nest till well into May. This prolonged idleness emphasizes the irresponsible vagrancy which stamps the sedge-warblers' habits and method of song; many weeks pass, and still the restless reddish birds are chiding and chattering among the flags and willows, with none of that anxious concentration on a single spot which is displayed by nesting pairs. They seem attached to every clump of willows and dry flags in turn, until they are disturbed from it; then they transfer their babble in elusive mockery to the depths of the next dry belt of sedge.

Sedge-warblers sing persistently from April till July, or even August, and whitethroats at least until mid-June. Their voices are almost as omnipresent in leafy places as those of the song-thrush and black-bird and chaffinch, which are at the height of their song when the summer birds arrive. It is one of the chief interests of April to listen for the more fugitive voices. These belong to migrants which fall silent soon after their arrival, or pass on, with a snatch of song during their brief halts, to nesting-grounds further afield. The song of the wheatears is soon over; and whinchats have a similar but much scantier song, which is heard most frequently in April or early May. Both these birds haunt bare

hills and open ground, though wheatears prefer tracts of smooth turf, and whinchats some bed of dense furze or rough slopes sprinkled with thistles and fennel. Stonechats are partial migrants which often reappear in their summer haunts in early April, from winter quarters in sheltered valleys or on the coast ; and they too scrape out a thin moorland tune which is seldom heard after April. Pied flycatchers occasionally appear in the south of England in the second half of April, passing on to their usual breeding quarters in Wales and the north-western counties. They are always scarce, except in the circumscribed spots where they nest, and are seldom seen in the east and south except on passage. The cock pied flycatcher is parti-coloured like a magpie, and is a far more striking bird at first sight than the sober spotted flycatcher, which all through the summer haunts our gardens. As the pied flycatcher reaches its breeding quarters it grows restless, and searches for its mate in the woods and spinneys ; it utters a thin, mouse-like cry as it flits from bough to bough, and sometimes breaks into a snatch of song which recalls the redstart's.

Nightingales are shyer birds than whitethroats, whose haunts they often share when they are not too dry and open ; and they wait till fuller cover shoots in the fringes of the thickets before settling in their English haunts. They come, as a rule, about a week later than the whitethroat, though the interval is not so long in the south-eastern counties, where they first enter England. Later migrants follow at their appointed time, when their appropriate food

and cover are prepared. The nightjar comes at the end of April or in early May, when the night-moths begin to hatch abundantly ; and the butcher-bird follows a few days later, to feed by day on the beetles and bumble-bees which the suns of increasing spring call forth more abundantly. The arrival of these two birds seems to be fixed by the appearance of a special food supply ; but the late arrival of the reed-warblers seems due to the slow growth of the reeds in which most of them spend their lives. Stragglers appear now and then in April, but most delay until the new season's reeds are beginning to shoot green in May. Then their silvery babble begins to pour interminably from the rustling cane-beds ; but they usually wait to build, like the sedge-warblers, until there is ample cover to hide both them and their nests. Reed-warblers and sedge-warblers are often mistaken for nightingales by inexperienced ears, when they are heard singing in the June and July nights. The mistake shows the power of a name ; they sing by night, and therefore they must be nightingales. But the songs of the water-warblers and the nightingale have little in common ; and the music by the streams and meres of later summer rings thin beside the nightingale's passion of spring song.

A WONDERFUL display of bloom and verdure paints the sea-cliffs of south Cornwall before midsummer. As sheets of a single colour, no display of blossom can surpass the heather on a thousand August moorlands, or a downland hill-top of dense mustard blossom. But the Cornish cliffs excel such single displays in the variety of their vegetation, just as they overwhelm the mingled blossoms of inland woods and commons in multitude and richness.

From the edge of the cultivated fields the cliffs break away to the sea, two or three hundred feet below, in steep slopes of verdure and rock, which, though interspersed with many precipices, are by no means wholly precipitous. With activity and fair steadiness of head, it is possible to thread one's way from one rocky terrace or steep lawn to another along wide tracts of the sea-face. The beauty of these wild hanging gardens is amazing, and is greatly heightened by their position over the wave-washed reefs beneath, by the landscapes of the sinuous coast-line, and by the vast horizon of sea. Their chief and almost universal feature is the contrast of the sheets of red, white, and blue blossom. The sea-pink, or thrift, supplies the red, the cloaks of matted sea-campion the white, while the blue-bells, growing densely on all but the most exposed

headlands, complete this striking combination of colour, and repeat the blueness of the sea and sky. In the soft airs that blow from the Gulf Stream many blossoms are found decking the open cliffside which in other parts of England are confined to sheltered inland corners; while plants which on other coasts grow sparsely are here luxuriant and high. Deep beds of primroses slant steeply seaward, fading on the slopes in May among the bracken and the bluebells; and many hollows are strewn with the gold of the gorse. As the bluebells and sea-campion fade in turn, the hanging terraces are beset with the massed rods of opening foxgloves, which for nearly a month prolong their stain of purple, as the blossoms successively unclothe from the butt to the point of the stem.

But almost more astonishing than the wealth of diverse blossom on the cliffs is the profusion and intense luxuriance of their verdure. There are many earthy and rocky slopes, often as much as a quarter of an acre in extent, which are entirely covered with young and tender ivy-shoots, forming a mantle of almost incredible freshness and lustre. These ivy-slopes run at every angle from a gentle and traversable ascent to a sheer precipice. Many of the upper and less precipitous folds of the cliff are covered almost as densely with the intense green shoots and purple blossoms of the ground-ivy, which here justifies its name by its dense, creeping growth, though it is no relative of the ivy. Here and there, in some lonely or inaccessible garden of the cliff-face, stands a may-tree white with blossom. Up the

cleft in the cliff far above it, and over the brow where we stand, its scent is borne on the warm sea-wind in a lively current, with boundaries sharply defined. As we wander on the steep sea-terraces, we find here and there shy flowers of inland woods unexpectedly blooming almost within reach of the spray. On the crags of an out-thrust ness, where the last verdure merges into the zone of lichen and seaweed, the scarlet pimpernel lifts its face to the sea-horizons among the dry heads of last year's samphire flower. Few feet but those of the cliff-fox, the rabbit, or the alighting gull or jackdaw, thread the more intricate slopes of these cliffs. The attraction of primal solitude enfolds their air-girt lawns. Sometimes, across a sheer gash in the slopes, there comes in view a little grassy garden, hanging on the steep of the crag, and absolutely inaccessible to man. As we see the wind blowing on its cowslip flowers, and watch the untroubled business of the nesting wren, it is like a glimpse of the virgin world.

Many of the troughs and hollows in the cliff-face are almost inaccessible, not because of any dizzy steepness, but because they are filled with a dense growth of wind-clipped shrubs which forbid the passage of anything larger than a rabbit or a fox. These masses of blackthorn and privet are cut so close by the wind that their upper surface looks almost as solid as green turf or a moss-bank in a wood. They form a kind of false bottom to the hollows and gullies, and may be anything from one foot to eight or ten in height. The highest of the thickets are sometimes thin enough underneath to

make it possible to struggle through them, and pass from point to point amid a twilight under-world of rabbit-burrows. But when, as is usual, they form a wiry, resilient cushion a yard in depth and full of underlying pitfalls, they are absolutely impenetrable. No yew hedge in a garden is clipped more evenly than some of these spiny slopes, which cling to the gullies and depressions of the cliff-face like snow-drifts on mountains. It is a kind of topiary-work which testifies to the unceasing rasp of the landward winds in these sheltered slopes, where no winds but the sea winds come. In stormy weather the wind spouts up the narrow gullies in the cliffs so strongly that if a slaty pebble is thrown over the edge it is caught up and carried back inland.

It is this direct exposure to the warmth and moisture which blow in from the Gulf Stream and the wide fields of the Atlantic which gives the cliffs of southern Cornwall their peculiar richness of vegetation. The contrast is very striking with the wilder and bleaker northern coast-line of the county, though the actual distance which separates them is but small. The dark mass of central moorland cuts off the north coast from the full effect of the southern and south-western winds, which are chilled, dried, and largely dissipated before they reach the opposite shore. The northern coast is less fully exposed to the sun and also more open to the cooler sea winds from the north-west. Thus, though north Cornwall enjoys the characteristic softness and freshness of the Atlantic air, its climate is rightly reckoned a bracing one; whereas, when the warm seas pour

their fullest tide of moisture on the slopes of the south there are spells of weather which many people find enervating. It is these days of steamy warmth that stimulate the plant life of the southern cliffs and combes to its almost tropical vigour. When a warm sea-fog enfolds the shore, the atmosphere approaches that of an orchid-house or a Central American forest, and the flowers and verdure luxuriate in the teeming air. The deep lanes are half-filled with the profusion of the bracken and lady-ferns, which seem to lick up the atmosphere with their long fronds. There, too, may linger the *osmunda* fern, now almost eradicated. From such a vapour-bath all vegetation emerges with new lustre and vigour; and it is not till such a day of steeping weather settles on the cliffs that we fully realize the reason for that wealth of flower and foliage which they offer to brighter skies.

At times the sea-reek lasts unbrokenly for many hours together; but often successive tracts of fog come rolling over from seaward every hour or two, with intervals of an unclouded sky. As we stand on some furze-scented headland, fronting a long perspective of sun-bathed coast-line, the dreary note of the fog-signal on the distant Eddystone is borne in for an hour at a time. Thick weather is drifting out at sea in the pathway of the ocean vessels. Sometimes, too, where a moment ago we watched the long beak of some point a few miles distant, with the white houses sheltering in its bay, now, on looking round again, that part of the picture has vanished from beneath the sun. Then we trace

the neutral-tinted fog-bank fumbling like a blind sea-creature along the shore, or resting for half a morning in the gap between two out-stretched heads. Presently the sunlight is faintly dimmed, and a breath seems to pass across the crystal of the sea ; in a few moments more, sky and sea are both hidden around us, the cleft in which we are standing is filled with a dance of grey vapour, scurrying inland, and the ferns and bluebells of each hollow begin to gather a quickening dew.

The bird-life of many of these bays and headlands is hardly less rich in interest than the verdure and the flowers. The Cornish chough has not been seen for a score of years or more in many of its old haunts on the southern cliffs, though it is now beginning to increase again, under protection, on the vaster precipices of the north coast. Its chief home in these isles is now in the south-west and west of Ireland. But although the quaint red-billed crow is gone, and his haunts are peopled by the assertive jackdaw, the raven is still familiar on the rockier portions of the south Cornish coast. By his large size and manner of conscious dominion, he generally comes into notice before many hours have been spent upon the cliffs. In spite of his stronger and more emphatic flight, it is often difficult to distinguish by the eye the raven from his smaller kinsman the carrion crow, since in these limpid fields of air it is hard to judge the distance, and therefore the actual size, of any remote object. But there is no mistaking the raven's hoarse, sharp bark ; it is a cry instinct with menace and defiance, and is

thoroughly appropriate to the lord of these sea-beaten crags.

Large and imposing though the buzzard appears upon the wing, this cumbrous hawk seldom dares to make more than a pretence of resisting him if their interests clash. The kestrel is a lesser marauder which is common on these flowery cliffs; there is a strange fascination in watching from above its outspread wings glide slowly round the butt of a crag and hang motionless above the waves below. It seems as if the attraction of gravity were not to that remote floor of the sea, but to the firm rock close by its side. The gallant ruddiness of the kestrel's eggs, nested in some dark cranny in an ivied scarp makes an attractive contrast to the gulls' eggs dotted about the open shelves of the headland, with their many tints of bay and umber-brown, but none of red. By far the commonest gull in spring along the shores of south-east Cornwall is the herring-gull, which forms strong colonies on many of the more prominent headlands, and fills the neighbourhood with the activity of its nesting life. The large but shallow nests are placed in all situations, from just beneath the very crown of the cliff to some stony ledge almost within fling of the spray at high water. The loose material of which they are composed varies greatly according to their position, since the gulls draw together with little discrimination such soft stuff as is nearest at hand. Near the top of the cliff their nests are chiefly built of grass-tufts and dry fern, near the sea-level much use is made of seaweed, while tresses of the sea-campion and tufts of sea-

pink are largely utilized on the midmost slopes. There is no sign of any attempt at avoiding attention, either by mimicry or by concealment, and the three eggs which form the usual nestful are not very much less conspicuous from above than the sharply outlined form of the sitting-bird in her plumage of pure white and delicate grey.

The numbers of the breeding pairs are swollen by a considerable proportion of immature birds, with plumage still more or less mottled with obscurer grey and brown. Where a herring-gull is seen contentedly brooding, with yellow bill tucked down upon her white neck, among the bluebells and shining ivy of a cliff ledge, she forms a beautiful picture in the life of these wild sea-gardens. The greater and lesser black-backed gulls also breed in the same colonies, but are very much less common. The greater black-back is twice the size of the two other gulls, and is as savage and predatory a bird as the raven or any of the hawks. The lesser black-back is a good deal the more common of the two ; but there are, perhaps, not more than one or two pairs of lesser black-backs in the joint colonies along this shore for every hundred pairs of herring-gulls. It is only of late years that they have made their appearance as regular breeding species on this part of the coast ; and they are still regarded by some of the fishermen as due to the breeding of the greater black-backs with the herring-gulls. Like the crow and the raven, the two dark-backed gulls are difficult to distinguish at a distance, and they will seldom wait to be inspected close at hand ; but

the larger bird is not only more powerful in flight, but is perceptibly blacker upon the back and wings. These parts of the lesser black-back are of a very dark slate-grey. The lesser black-backs have a way of settling rather on the fringe of the gulleries—especially on the topmost part of the cliff—as if they were aware of being newcomers, and present only by sufferance of the majority. But their nests and eggs are in all respects so like those of the herring-gull that they are only to be distinguished with certainty by seeing the parent bird actually sitting upon them.

Thanks to the richness of these cliffs in leafy cover, land-birds as well as sea-birds abound at the breeding season on many slopes. Parti-coloured stonechats mount guard in every furze-brake over the securely hidden nests, when their duskier hens are sitting; linnets people the same thickets with flight and song, green woodpeckers haunt the scrubby hollows, and the elfin wren works busily within sound of the Atlantic. From the deeper brakes the blackbird chatters his familiar alarm: and on the upper grassy slopes the meadow-pipits toss up and down in parachute-like flights of song. But most truly native to the spot of all the smaller birds is the rock-pipit, which is as inseparable from surf-beaten coast-lines as the petrel from the open seas. The rock-pipit is a small and dusky bird, of fugitive and restless ways, and of no great power of song. But it holds an exceptional position, as a land-bird by kinship and appearance which has wedded itself to the craggiest and most tempest-

beaten shores. Not even the buoyant gulls and the eldritch cormorants of the caves seem so nearly the incarnation, or animate symbol, of the meeting-place of sea and land as the rock-pipit. It is strange to see so small and landlike a bird shrilly fleeing over wastes of spray, or interweaving its wavering trill with the voices of songless sea-fowl and the diapason of Atlantic tides.

As spring advances, the voice of the cuckoo penetrates further and further to northward, until even the wind-beaten Shetlands have heard its signal. Possibly it is owing to the cuckoo's habit of shirking the duties of parentage that it is able to extend its wanderings so far afield in the brief northern summer. It begins to return to the south before the diminution of its insect diet in the shortening August days threatens it with a failure of supplies; and the young which it leaves behind for several weeks longer are safeguarded by being nursed, for their first British summer, on the special food of infancy proper to young birds of various other kinds.

Old cuckoos, however, live largely on the hairy caterpillars which few other birds will eat; and their main body arrives in the south of England about the end of the second week in April. This is the average date when the caterpillars awake from hibernation and resume their pasturage, which has been interrupted by seven or eight months' torpor. In most years it is also just the time when the grass begins to shoot luxuriantly, covering the meadows and hedge-banks with a new and vivid growth. The caterpillars feed on the grass, and the cuckoos on the caterpillars; and grass and

caterpillars and cuckoos all appear together, in a normal year, just before the middle of April. We can hardly miss noticing the luxuriant verdure of the grass and the cuckoo's loud halloo, but the caterpillars are sometimes more elusive. A sure way to verify their reappearance is by looking beneath the overhanging edges of stumps, stones, or large chips of wood in green lanes and on hedge-banks, on warm but overcast mornings when the grass is still sprinkled with a night's rain. The hairy drinker caterpillars, and several other species, seem to choose such refuges on days in April which are too damp and chilly to encourage them to feed in the open, but not so cold as to send them back into the earth. Six weeks later the full-fed drinkers merely retreat on wet days to the thick, lower growth of the grass; but in April the grass is still thin, the air is colder, and they themselves are smaller and less vigorous. They accordingly seek a more solid screen from uncertain weather, and lie curled, with globes of water on their hairy skins, until the sunshine returns.

The cuckoo, like the nightingale, is heard far more often than it is seen, but not because it is specially fond of hiding itself. Even in the more wooded parts of England it haunts the open glades and well-timbered meadows, rather than the dense thickets and coverts; and it is equally at home on the open and treeless moors, where it finds unfailing hospitality for its young in the nests of the meadow-pipit or, as it is called more often in these upland haunts, the titlark, or mosscheeper. A bird which

can equally well put out its young to nurse with the titlark of the mountain-side and the reed-warbler of the lowland morasses need never be deterred from travel by the thought of domestic encumbrances; and, since the ties of matrimony lie still more lightly upon the cuckoo than those of parentage, it is not even subject to the slight inconvenience of being compelled to wait for a partner. So far as any instinctive compulsion directs their movements, cuckoos seem to be subject only to the kind of local attraction which draws most migrant birds to the same spots year by year.

It is as the "wandering voice," and not as the bird of peculiar and notorious habits, that the cuckoo exercises its widest attraction. Its primary appeal is to the ear, as that of its fellow-herald of spring, the swallow, is to the eye; and for many people its mystery, even when the bird is seen, is safeguarded by its likeness to a sparrow-hawk, and by the still prevalent belief that the cuckoo is the double body into which the hawk turns for the summer. This belief is probably a very ancient human heritage. In common with many other superstitions, it was mentioned in his *Natural History* by Aristotle, who accurately pointed out that the cuckoo's head and claws are very unlike those of a hawk, and added that, although the hawk which the cuckoo resembles is generally not to be seen when the cuckoo is present, yet they have been seen together. Whilst the first cuckoo was calling among the snow-patches on the hills

in Wales, the question was once asked whether there were any cuckoos in foreign countries—countries, the questioner meant, where there were none of our cuckoo-like hawks. The answer was doubtfully received ; it was a struggle of rationalism with tradition.

The obscurity of the cuckoo's life and habits lends colour to some more sophisticated errors. Admiration has been expressed for the marvellous instinct or intelligence which leads the hen cuckoo always to choose out for her own eggs the nests of insect-eating birds, so that the young cuckoo is provided with its indispensable food. It is true that this is her general practice. But the habit is by no means so invariable as to afford an example of infallible instinct ; and insect-eating foster-parents are by no means so indispensable to the welfare of the young cuckoo as to present her usual preference in the light of a triumph of discrimination. Young cuckoos are occasionally found thriving in the nests of such typical hard-billed, grain-eating birds as the chaffinch. Most, if not all, of our birds which are seed-eaters in maturity are provided with a soft insect diet as nestlings ; and the young cuckoo hatched in a chaffinch's or linnet's nest is not worse fed than if it were the foster-child of a hedge-sparrow or a titlark. But it is unlikely that all would have gone well with the young cuckoo hatched from the egg recorded to have been found in a dabchick's nest. This seems a clear case of a breakdown of parental instinct or judgment in the sole point connected with the care of its offspring,

in which the cuckoo usually exhibits itself in a satisfactory light. Occasionally instances are recorded of cuckoos helping to feed their own young, or otherwise showing an interest in them; but as a rule the parental instinct in the cuckoo is entirely extinguished from the moment that she has placed her egg in the nest and flown away.

Hen cuckoos have been observed in the act of carrying an egg, but this is an egg of their victims. It has now been clearly established that they lay their eggs in the actual nest of the fosterer, when the size and position of the nest make it easy to do so. It is known from dissection, that her normal number of eggs is from five to seven, like those of very many other birds, especially those which lay, like herself, when spring is well advanced. But if a series of suitable nests are available, this number may be much exceeded. From the difference usually to be seen in the colour and markings of any two cuckoos' eggs found in the same nest, it seems clear that the same bird finds a different nest for each egg she lays, though she has not the discernment or foresight to avoid a nest in which there is already a future rival for her own changeling. It is war to the death between two young cuckoos in one nest; and, if the second egg is inserted even a day after the first, the start in incubation must often give an insuperable advantage to the first-hatched bird. The cuckoo's egg is generally dropped in the foster-parents' nest while their own are being laid; but sometimes it is inserted while the nest is still empty. As can easily be proved by

experiments among the nests in any shrubbery, birds vary a good deal in their attitude towards windfalls of this sort. Many will placidly accept an egg not too outrageously disproportionate in size to their own, while others will throw it out or desert the nest, or sometimes both. Probably the cuckoo sometimes defeats her purpose when she puts her egg in an empty nest. A cuckoo's egg has been found buried under the nest's thickened lining—an incident which suggests that not every bird is willingly the dupe of the cuckoo in the earlier stages of the deception.

But as soon as the young cuckoo is hatched, the normal increase of attachment to the living young makes the foster-parents the most infatuated guardians of this "feverish, sharp-toothed child." From within a few hours of its birth the copper-coloured imp seems filled with a frenzied passion of growth, as though intensely aware of the swift development it must make from its disproportionately small beginnings. Actual teeth it has not; but long before it learns to make its later lively use of beak and claws, and while it is still as blind and naked as a penny, it effectively gets rid of the rivals which it cannot see, but can feel, by use of its special weapons. These are a marvellously precocious vigour and dexterity, and an unusually broad and concave back. Jenner, the Berkeley doctor who discovered vaccination, was one of the earliest recorded observers of the process by which the young cuckoo throws the other nestlings out of the nest, and has left an accurate account

of what has sometimes been suspected to be a fable. Repeated observations have now placed his accuracy beyond doubt. Before the young cuckoo is two days old, and when there is still but little difference in size between the young birds of most of the fostering species and itself, it wedges its body beneath that of the nestling which has to be got rid of, and hoists it up to the edge of the nest on its own broad back. It partly holds it in place with its stumps of wings, which it uses as sensitive organs of feeling to compensate for absence of sight. Usually it works its way up the side of the nest backwards, as it is still almost unable to lift its heavy head; and sometimes the victim falls forward into the nest again, and the process has to be repeated. The young bird generally falls from the edge of the nest as the result of its own blind struggles; it is sufficient for the cuckoo to make sure that it does not slip back into safety. After it has fallen outside, the cuckoo can be seen feeling on this side and that with its wings, to assure itself that there has been no mistake about the success of the operation. Nature's arrangements for the rearing of young birds do not provide for the rescue or support of any which tumble from their proper cradle, whether a young cuckoo is the cause of the mishap, or merely a high wind, or a badly built nest. In less than forty-eight hours from birth the rival princes are out of the way, and the vagabond is undisputed heir.

There is no valid ground for the belief that the

hen cuckoo deliberately places her egg in a nestful chosen from their close resemblance to her own. Cuckoos' eggs vary much in colour, and the colour generally shows a partial approximation to that of the eggs among which they are found. But this resemblance is seldom so thorough that a closer one, or many equally close, cannot be picked out among a score or two of instances. If we examine a large series of cuckoos' eggs together with those from the same nests, and not specially picked for the purpose of bringing out a resemblance, the likeness of the cuckoo's egg to those among which it was found is often no greater than to some nestful of a different species. There are very few cases in which the likeness is close enough to rank with such striking, familiar instances of protective resemblance as that of the stone curlew's or tern's eggs with their pebbly surroundings.

None the less, it is a striking fact that the cuckoos' eggs found in the nests of the several species of foster-parents show a distinct similarity among themselves. Cuckoos' eggs from reed-warblers' nests, for example, are suffused with a peculiar bronzy-green, though this is by no means sufficiently like the distinct mottlings of the reed-warbler's eggs to deceive for a moment a human eye. From this prevailing likeness between cuckoos' eggs from similar nests, together with their vaguer general likeness to the eggs among which they are found, it is difficult to avoid the conclusion that the cuckoos' dependence upon various species of birds does influence the colour of its eggs in some degree.

It seems probable that there are separate races or clans of hen cuckoos, each dependent on a separate species of foster-parent. It would seem not unnatural for the cuckoo to frequent the company of the kind of bird by which she was brought up, rather than that of other species with which she has had no connexion. The partial assimilation of the cuckoo's egg to those of its hosts' would follow, on the principle of protective mimicry, from the association of each clan with foster-parents of a certain species. Then, however, the question naturally presents itself why, given these stable hereditary habits, the likeness of cuckoos' eggs to those of their host is not more thorough. Apparently the answer is provided by the fact that cuckoos neither pair, like the great majority of birds, nor practise polygamy, like the pheasant and other related species, but are polyandrous, if not actually promiscuous. While the hens are respectively attached to definite species, the cocks may have no such ties. And since many different cocks mate with a single hen, cross-currents of blood must thus perpetually be introduced from other clans to confuse the fixed hereditary strain of the hen. But the influence of these cross-strains on the type of egg is partly counteracted by their mutual opposition, so that the hen cuckoos of each clan continue to lay eggs imperfectly resembling those of their foster species, though the resemblance is very slow in becoming complete.

The extreme smallness of the cuckoo's egg in proportion to the size of the bird seems plainly

due to the same process of gradual assimilation, proceeding with less interruption, since the eggs of the cuckoo's usual hosts are much more closely alike in size than in colour. It is noticeable that cuckoos' eggs found in wren's nests—one of the less common attachments—seem usually to be much smaller than others, though by no means so small as the wren's. This appears to be another illustration of the conflict of the fixed hereditary tendency of the female cuckoo with the varied influences of the males. Cuckoos' eggs offer evidence of degeneration from an original type, not only in their disproportionate smallness, but in their peculiarly indecisive and, as it were, atrophied markings. Compared with the eggs of almost all other British birds, they are stamped with the vagueness of a compromise. Besides their usual faded mottlings, they also show, as a rule, faint dots and dashes of a darker and more superficial pigment, which appear to be the last remaining traces of a more positive scheme of colour. As the May nests multiply in the garden and meadows, the appearance of a cuckoo's egg in a hedge-sparrow's nest, or some less frequent nursery, presents a perpetual and suggestive exception to ordinary rules. It is deeply interesting to come upon the one greenish egg lying among the four or five others, to reflect upon the strange career of the nestling to be born from it in a few days more, and to endeavour, in the light of the rebellious contrast of the cuckoo's habits, to understand more clearly the ordered interests and relationships of all our birds.

The cuckoo's cries provide the most striking example of the development and decay of summer song. Though the old rhyme hardly exaggerates when it says that "in May he sings all day," it is far less correct in the following statement that "in June he changes his tune." It is true that the cuckoo's treble note "cuck-cuck-oo" is heard more often as summer goes on; but it sometimes occurs at the very beginning of the season, while the ordinary double note, which is the full spring song, is sometimes its last note heard. Every variety of the cuckoo's cry is uttered when a hen bird, perched in a single tree or copse, calls up one or two of the cocks. This happens most often on some fine May evening, and the tumult is immense. The hen cuckoo utters a loud, bubbling cry, sounding like air expelled from a tube filled with water; and the cock birds reply to this with a storm of the full cuckoo notes, interspersed with all the broken varieties of the same cry which are heard in later summer. The notes range from the full "cuckoo" delivered with the utmost vigour, through the "changed tune" of "cuck-cuck-oo" and "cuck-cuck-cuckoo" to a harsh gabble of "cack-cack-cack," repeated indefinitely. The cock birds are flying excitedly to and fro, now put to flight by a chance alarm, and now recalled by a new outburst of bubbling from the hen bird. When the gabbling note of the cock cuckoo is uttered in a low tone as the bird comes hastening up, it sounds like the cackling laugh of the magpie heard two or three hundred yards away. All the cries of the cuckoo during the whole season

are now repeated, and we can detect how they are all derived from the gabbled note of "cack-cack-cack," which is itself the repetition of a single inarticulate cry. From these rude elements the voice is developed with the increasing vitality of the nesting season through several stages, each gaining in clearness of tone until it reaches the perfect call, with its strange power of carrying memory backwards.

THERE is more convenience than accuracy in the use of the term "flowering trees," or flowering shrubs, in the gardener's sense. The oak and the yew are as much flowering trees as the cherry or the laburnum ; yet we habitually put those trees which make a free display with their blossoms into a separate mental class, and it is almost a necessity to have an easily understood term to describe them. The brakes and woods of Britain have been strikingly well endowed by nature with wild trees and shrubs of this kind. Few of the foreign flowering species which from time to time have been acclimatized in our gardens excel in beauty our native gorse, broom, apple, cherry, hawthorn, or wild rose ; and, so far from the rarity of these plants being equal in measure to their beauty, most of them are among the most abundant and widely spread species in the British flora.

Very early in the springtime the arbitrary nature of the distinction between flowering and other trees begins to show itself in English fields. No one would naturally include the elm among flowering trees ; yet many elms assume a beauty of blossom in March and early April which richly entitles them to the name. When strong sunlight falls upon the still leafless crown of the elm, it kindles a crimson

glow from the small but numerous blossoms which crowd the twigs ; there is hardly a brighter display of colour in the whole outdoor year than is to be seen when a long line of crimson elms thrust their plume-like tops against the blue of some clear March afternoon. Though the leaf-buds are scarcely yet swelling, the abundance of the elm-bloom on vigorous trees gives a density at this season to the whole outline of the bough, and throngs it with the sense of life. Often the rooks are busy with nesting in the same crimson branches ; and when the strong sunshine plays upon their plumage of glossy black, as they pace the twigs with many cawings, the peopled elm-crowns seem the centre of spring's animation and colour.

Elm-flowers are often overlooked because they open for the most part out of human reach. Even when blossoms are borne upon some branch not more than nine or ten feet from the ground, they are generally so few and scattered in this lowly situation, and are so inconspicuous when seen individually, that they make but little impression upon the casual eye. At the time when the elm-boughs are densely blooming round the lofty houses of the rooks, the hedgerows and thickets beside the humbler paths of man begin to whiten here and there with the blackthorn flower. Like the elm, but unlike some of its own close relatives which are seen in gardens and sometimes also in the woods, the blackthorn opens its blossom before its leaves. It is always one of the first wild plants to flower in spring ; but the time of its first appearance varies greatly in different

years, according to the weather. In mild years and in sunny hillside hollows where later the grasshoppers abound, it may be seen with its loose stars flung open even in February. In cold springs the great burst of sloe blossom may be retarded till nearly May; while the normal time for its appearance is about the second week in April, and it is therefore this moment of the year that we call the "blackthorn winter," if, as is common, it proves but little like spring.

Much like the old-fashioned farmers who in wet harvest-times would kick the weather-glass down the yard, there are people who during unpleasant April weather of this kind are wont to cast imprecations at the whitened blackthorn bushes when they meet them on their shivering walks. There is, indeed, a peculiarly dead and chilly tone about the whiteness of the blackthorn petals, suspiciously akin to the hue of the half-melted drifts of hail which are left by a whooping April squall. By the doctrine of sympathies, once of high repute in science, this might be supposed to show that the blackthorn was responsible for these Arctic inroads. Yet, in point of fact, there is nothing that suffers more from a blackthorn winter than the blackthorns themselves; for when frost and hail burst down from the eastern sky at the moment of their most plentiful flowering, the incipient fruit is destroyed, and they bear no purple sloes in the hedgerows of October. The precise limits of the period when fruit blossom may be killed by cold are always a little difficult to determine; sometimes the fruit proves to have taken no harm

from a spell of wintry weather which seemed to promise the worst. Yet the scarcity or abundance of any kind of fruit in autumn, whether cultivated or wild, generally bears a close relation to the weather which prevailed at the crucial moment in spring; and if the blackthorn blossoms in a blackthorn winter its boughs are as likely to be bare in autumn as those of the kindred plum and damson trees of the garden which flowered at the same time.

The blackthorn is the first of a long succession of white-flowering trees and shrubs which spread their abundant bloom over a large part of the country all through the spring and earlier summer, and do not come to an end until the last disc of elder flower has faded in the bronzed July hedgerows. White is by far the commonest colour among the flowering trees and shrubs of Britain, and no other could be so thoroughly in consonance with the cool freshness and temperance which breathe so deeply from the luxuriance of an English summer. Yet these white blossoms are by no means all of the same fashion of whiteness; indeed, many of them are not strictly white at all, though in a far-flung landscape they seem to repeat among rivers, woods, and meadows the pureness of the sailing clouds. Nothing is whiter than the scented petals of the wild cherry, which are outshaken in the April woodlands, simultaneously with the tender leaves, before the day of the blackthorn is yet over. But the apple blossom, which follows, is lit with pink; it is this blush on the white bloom of the apple tree which makes it perhaps most beautiful of all the blossoms

of May, and far more pleasing than the untinged blossom of the pear. The wild pear is a tree so rare that it counts for nothing in the pageant of the spring. But the wild crab-apple trees make a very shrine of beauty in the midst of the woods of May ; there is no picture so full of the sweetness of wild English blossoms as some sun-chequered corner in a wood of bluebells, where the apple-blossom hangs between the earth's blue and the heaven's, and the petals fall upon the wind in the mingled fragrance of both flowers. Richness and purity are here supremely combined ; colour and life abound, and yet there is no hint in these May woods of that sensuous burden which comes sometimes to the later English summer, and in the summers of more southern lands seems never far away.

As the apple-blossom fades, the foam of the hawthorn begins to whiten. Yet the hawthorn-blossom is not pure white ; when it first opens it is tinted with cream-colour and sea-green, while the fading petals are soiled with a dull pink stain. Since the reform of our English calendar, the " May " is not always seen fully in flower during the month after which it is named. When our ancestors acclaimed its blossom as the typical flower of May, their May left out a week or more of the early part of our month, and took in as much of June. This fact not only vindicates their observation in this instance, but adds much force to those poetic praises of the month which in modern times it does not always fully deserve. The May of Chaucer's calendar must, indeed, have covered the most perfect period of

the year, in which the reviving forces of nature were seen in their fullest tide of increase.

A little later than the hawthorn, the wild dog-rose begins to poise on its arching briars those blossoms which mark the very climax of the year. Of roses, and of their kindred brambles, there are innumerable species and varieties known to science ; but there are two main types of wild roses, common in English hedgerows and thornbeds, of which one is tinged with an even more delicate pink than that of the apple-blossom, and the other is white. The pink dog-rose is in most places the more abundant of the two, and is far the most attractive and truly rose-like. The white, or trailing, rose is comparatively dull and opaque in colour ; and it is usually a scentless rose, and therefore hardly a rose at all. It can be distinguished even in midwinter by its flexible and slender stems, its much smaller and rounder hips, and its comparative thornlessness ; for the adage that there is no rose without a thorn seems true in intensive degree, and the rosiest of the two common roses is armed with tiger-like talons which are unknown to the more degenerate kind. After the pink rose fades, the white one and the huge clan of brambles alone carry on the succession of pure white or delicately pink-tinged bloom. The last common flowering shrubs of the year are the elder and the wayside dogwood, both of which bear blossoms tinged with yellow or yellowish green. Before the heavy-scented discs of elder-bloom have faded, they shine through the July dusk over empty hay-meadows from which the grass, and the flowers of

the grass, are carried ; and when they, too, have vanished, the youth of the year is gone. The latest birds sing only a short time longer ; and the keener spirit of life has fled to the mountain and moorland, where the heather is now purpling the wildernesses.

The trees and shrubs which have been so far named are common in nearly every type of English scenery. There are many others which are chiefly confined to particular kinds of soil, or regions of a certain elevation and climate. In the hilly counties of the north and west one of the most conspicuous trees of spring is the bird cherry, which is distinct in appearance from either the tall wild cherry or the more bushy dwarf cherry which are common in the south. Its white flowers form long clusters or racemes, which at first are uplifted, like the blossom of the Portugal laurel, but later droop, like that of the pink ribes or flowering currant. No flower is more deeply associated than the bird cherry with April in the wooded valleys of western streams, when the grey wagtail and water-ouzel are already busy with their young, and the sandpipers are returning to their sand-spits and pebbly flats.

Another group of shrubs finds its favourite home on a soil of chalk or grey mountain limestone ; for although the broken contours and bare scars of the limestone hills present so great a contrast with the vast simplicity of the chalk down's curves, the similarity of the soil nurtures a closely kindred flora. Thyme and the golden cistus, or rock-rose, abound in the close, sweet turf of either formation, though the rock-rose, at any rate, may not be found in the

scores of miles which intervene. In like manner, both on the limestone and the chalk, we find in the hedges and thickets a characteristic growth of the guelder-rose, or wayfaring tree, the lighter water-guelder, and the wind-loving whitebeam. The wayfaring tree is a prim but strongly individual shrub, recalling more than most other wild species, especially when young and of moderate size, the round-headed bushes in tubs beloved of the Dutch gardener. Its discs of creamy blossom, smaller but denser than those of the elder, and the liberal berries which follow, give the guelder-rose a favourite place among British shrubs. It never grows in a spot where nature is featureless or dull. The water-guelder, which haunts the wet copses and stream-sides, is as straggling a bush as its kindred species is prim. Often the ends of its wiry boughs dip into the surface of the stream; and there the dabchick may heap her saturated nest of weed, mooring it against the strength of the current under the descending twigs. The flat, loose heads of creamy blossom make a pleasant show in May and June over the thronging verdure of the water-sides; the outer flowers of the head are blank-eyed and unfertile, though from their large size they give its chief beauty to the bloom. This water-guelder is the original of the guelder-rose, or "box-rose," of old-fashioned gardens.

In autumn the leaves and berries of both species often produce, on a small scale, one of the most brilliant displays of scarlet and crimson in all the woods. Though the whitebeam much resembles

the wayfaring tree, and is found in the same haunts, it belongs, like the service tree and the hawthorn, to the great order of the roses. Its heads of pearl-white blossoms smell much like primroses. The privet is also common on the chalk hills, which from their more southern situation add an individual richness to the flora which they share with the limestone. That rare native, the box, finds one of its chief haunts on the chalk soil of Box-hill; and the same white rock is a favourite home of the spindle tree, which is so brilliant in autumn with its split berries of pink and orange, though it bears a dull little blossom. The wild clematis, or traveller's joy, is also a thorough native of the chalk and limestone soils, though it is to be found even on the brick earths of the Essex marshes. Like the honeysuckle, it is, in strictness, scarcely a shrub; but both plants lend in their season no less striking a beauty to English woods and hedges than the elder or the Yuletide holly. Nearly the smallest, but also nearly the most splendid, of all our flowering shrubs are the golden broom and furze. The common furze's great flowering time comes in spring, when it mingles both with the blackthorn and the hawthorn bloom; but the dwarf furze has scarcely ended its autumn blossoming before the taller bushes are again lighting a spark, thus keeping the fire of bloom alive on English bushes through all the months of the year.

MAY is the only month which is completely included in the period of the nightingale's music. In a normal season, its voice is first heard about the end of the third week in April, when the primroses are at the height of their blossoming, and before the haze of green about the elm-boles has thickened into opening leaf. By the time that the hawthorn blossom is at its height, the nightingales are beginning to be missed in the chorus of the whitened brakes; and before the first wild roses open, little is heard of their music but an occasional and broken strain. By Midsummer Day their voices seem already to have been forgotten in the dense-leaved woods. The herbage is rank and dark above their nesting-place; the abandoned nest is flattened by night-roaming fieldmice, or racked asunder by the growth of its sustaining briars. Once June comes in, amid the swiftness of summer's changes, there is a sense that every time the strong note pulses from the thicket it may be the last to be heard in the year's brief term of song. But up to the end of May there is no night, and no day, when the voice of the nightingales cannot be heard in the southern copses; and their unequalled music seems to mark the fulfilment of spring more thoroughly than even the complete unfolding of the leaf, or the blaze of

innumerable dandelions and buttercups in the sunlit meadows.

The spots which the nightingale haunts are those in which the successive features of unfolding spring reveal themselves with the greatest attraction, and it is this which helps to associate its song with some of the most beautiful phases of the year. Even more than most small birds, the nightingale avoids the dark interior of the woodlands. It clings to the fringe of the larger plantations, or the broken thickets and deep hedgerows, where the sunlight plays with the chequered shadows, and flower and verdure are nursed into early brightness. At the same time, it is a shy bird and a lover of sheltering cover; so that it is commonly found, not among the isolated bushes or low beds of thorn and herbage which suit the taste of many other nesting birds, but where denser harbourage is furnished by an even hazel-copse, or tangle of hawthorn and dog-rose, or some shadowed thicket where the lowest elm-boughs brush the spiny blackthorns. These favourite haunts of the nightingale are full of the richest flowers and verdure of spring. Where trees and lower bushes mingle at the edge of the wood, at the time of the nightingales' coming the black-thorn blossom stars its leafless boughs, the wild cherry unfolds its still purer whiteness, and primroses and anemones cover the ground beneath. As May deepens, the flowers grow taller; soon the anemone withers, and the primroses grow pale and lank, as the stronger sunlight fills the shadier places a little within the wood with the deep and liquid

azure of the bluebells. The song of the nightingale is not more deeply associated with any spot in English scenery than with the fringe of a beech wood in May, where the young leaves quiver on low-hung branches above the scented bluebell beds. It is such a chequered fringe or glade of the wood that Keats describes, with true observation, as the nightingale's typical haunt. The depths of a beech-wood are dark, columnar, and void of song ; it is on their outskirts, where the young and almost transparent foliage half subdues the sunlight to its own tender hue, that we come year by year, "in some melodious plot of beechen green," on the singing nightingale. When moonlight falls in such a spot, the foliage of many of the paler and more sheltered beech boughs shines as white beneath its rays as the blossom of the neighbouring cherry trees. The wild apple blooms in May in many of the nightingale's shadier haunts ; on the sunnier flank of the thicket the reddish gold of the gorse is reinforced, as the month advances, by the clearer yellow of the broom. White cow-parsley rises at the hay-field's side to meet the hawthorn boughs ; and only when their own foaming blossom completes the framing of the meadows, and lies banked upon the crown of the brake, do the nightingales' voices one by one cease, when the turn of the year's tide is almost come.

Disappointment often attends a first acquaintance with any object of great celebrity ; and this perhaps explains the tempered admiration which is occasionally expressed on a first hearing of the nightingale's

song. Also the mere fact that it is awarded the first place by general opinion is enough to make a certain number of resolutely individual persons aver that, in their opinion, it is actually a little second-rate. But when the nightingale is fairly compared with the thrush, the skylark, the black-bird, the linnet, and all the best of the song-birds with which our country abounds, it is hard to see how it can fail to be awarded the first place. The song of no other bird possesses such variety and intensity, while few can equal it in sweetness. Its chief blemish is in the interrupted character of its flow; for although a nightingale will often sing for hours without cessation, there is just enough pause between the successive phrases to tantalize, at times, the listening ear, and make the song seem inferior in sustained ease and smoothness to that of the skylark, or even of the song-thrush. Yet, marvellous as is the continuity of the skylark's song, poured forth without a moment's check while the singer is steeply climbing to the zenith, it lasts, after all, but a few minutes at a time; and the song-thrush, like the nightingale, pauses between its utterances, though not for so long.

Though there is no truth in the common belief that the nightingale sings only by night, it is undeniably true that its song is less striking by day. When the nightingale is only one of many eager singers, in each pause of its song the ear is partially distracted by the surrounding babel, and the continuity of the impression is checked. The very force and fire of the song seem also to urge it some-

times to the brink of harshness, especially when it over-rides the soft piping of the linnet or the willow-wren's delicate chime. Nor do the sunniest hours of daylight appear to wring such a transport of responsive passion from the nightingale's heart as some warm but dusky night of May, when all earth's essences breathe forth on an air from the west. The pauses, which by day were interruptions, now serve as a foil or background of silence, against which the bursts of throbbing music succeed each other with intenser effect. Beside the compass and the passion of this song, the music of the thrush and skylark seems limited and thin. Deep notes succeed to high in the nightingale's song with such a contrast of unexpectedness that by day, when many birds are singing, they seem to the unexperienced listener to proceed from different throats. We may listen to a nightingale through an hour of the night, and be seldom conscious of its repeating any phrase a second time. It will utter the same long, piercing note twelve, fourteen, even sixteen times in that poignant crescendo which is one of the rarest and most impressive features of bird music; then, with a quick, bubbling run, it will cease for a moment, only to be urged into some new and different strain by the call of its hidden rivals. For the crowning beauty of the song of the nightingale by night is the way in which bird answers bird under the cloud or stars, from near or far away. Each nightingale mounts guard at nesting-time over the space of ground which he claims peculiarly for his own; and where two or three of the birds are settled

in a garden, it will be noticed how each of them keeps strictly within certain boundaries. By night, when the passion expressed in song is greatest, they often take up a post for singing some distance in advance of their usual haunts by day, travelling down the hedge that leads from the distant wood, or crossing from the garden lawn in the dusk to ring challenge from the nearer thickets. Absorbed in utterance, they can be cautiously approached at such times to within three or four yards' distance; and even after they have taken the alarm and flown into deeper cover, if the intruder withdraws they will sometimes return to their posts in less than a minute, and resume the full tide of song.

Nightingales sing almost as eagerly at midday as midnight, and there are few hours in the day or night when their voices are not sometimes to be heard. But there is a general abatement of their song a little before the dawn; the passion of the earlier night is stilled, and the light is heralded by the clearer notes of the thrush. After the amazing burst of song with which the break of day is welcomed by every bird, there is comparative silence in the early morning hours. Birds are busy in feeding, and it is then, besides, that nests are chiefly built. From nine or ten in the morning to about five in the afternoon the nightingale's song is once more loud in the land. It may be heard from time to time in the earlier evening; but most of the birds seem content to be silent until a little while after sunset, or even until the inverted Plough swings luminously, if the night be clear, in the high May

sky. There is no complete silence in the bird world at evening before the nightingale begins ; for it is as great a mistake to think that the nightingale is the only night singer as that it never sings by day. Where the open skyline runs dark against the after-glow, the peewits are wakefully calling. They, too, have a fever by night in the blood. A song-thrush sings till the first planets are deeply burning ; and a song-thrush singing at evening has constantly been mistaken for a nightingale. The reel of the grasshopper warbler comes from the long grass in the meadows, the babble of the sedge-warbler from the river a little beyond, and the churr of the night-jar from the trees on the common or in the copse. The cuckoo calls afar ; a brown owl hoots, or a white one screeches ; partridges creak among the green young corn. Then, from the far copse beyond the cornfield, six hundred yards away, comes that vehement pulsing upon the ear that can be caused only by the nightingale. Its music enlarges as we near it ; but before every note is heard, another nightingale is answering from the hedge that bounds the field, and another from the osier-bed in the level meadows by the stream. Half an hour later there will be seven or eight vying with one another in the square mile or so of country which the stationary listener can command, and their voices ring on till long past midnight in the soft spring air.

The nightingale is a common bird of summer in moist and leafy places through a wide region of southern and south-eastern England. Unlike most other summer birds of passage, which land at various

points on the south coast, nightingales on their northward migration cross the seas at their narrowest point and pour from the Continent into Kent. Hence they distribute themselves fan-wise over England, their numbers being gradually reduced after they reach a certain distance from their point of entry in the extreme south-east. The limits of their range are roughly represented by a line drawn directly from the mouth of the Exe, through Eastern Glamorganshire, to Shrewsbury, and thence in a curve through Derby to York. But it is only in the south-eastern third of this area that they are really common birds. In the Thames basin they abound in suitable ground ; but in the lower Severn valley, though they can hardly be called rare, a nightingale singing on the skirts of a village or town is a visitor of note, and evening by evening draws groups of listeners to its haunt. This line drawn through England is the north-western limit of a wide European summer range. In winter nightingales withdraw to the interior of Africa ; and when they move northward again in spring a few halt for nesting as far to the southward as Algeria, which appears to be the southern limit of their breeding-range. The nightingale of the classics, which is still so abundant in Italy in spring, is the same species as our own ; but in Germany it meets the larger northern nightingale, called by the Germans the "sprosser," which has lately been observed for the first time as a visitor to English soil. Possibly the nightingale is prevented from ranging more widely across Britain by the heavier rainfall as much as by the loss of

warmth. For though the nightingale haunts a shaded soil, where its food of worms and insects abounds, it is fond of a delicate and tempered air ; it is almost as little of a true marsh bird as a dweller on the high, dry hills.

As is the general but by no means invariable rule with birds which have great gifts of song, the nightingale's plumage is plain and sober. It is not difficult to get a view of the bird while it sings ; for although it nests in dense, bushy places, and sings in the neighbourhood of its nest, it is fond of mounting for song to some spray in the upper and clearer part of the thicket, where it can often be watched for some time before it takes alarm and slips back into denser cover. Yet, in spite of its modest hues of brown above and pale grey beneath, only relieved by a warmer touch of russet about the tail, there is distinction in the nightingale's appearance. Though it is a good deal smaller than a thrush or a blackbird, it has just so much advantage of size over most other birds of the thicket as serves to attract attention ; and the quiet, clean contrast of its plumage is itself attractive. It has also a noticeably large and intelligent head and eye ; and this is one point in which it displays its close relationship to the robin and the various species of thrush. At first sight the family likeness between the nightingale and the robin is obscured by the difference of their habits ; for the nightingale is nearly as retiring, except when it is transported by song, as the robin is confident and obtrusive. Yet when the nightingale is seen lightly hopping among the branches of

the thicket, or searching for food along the grassy edge of some woodland ride, many of its movements and gestures are seen to be closely similar to those with which the robin has made us familiar. The close kinship between the two birds is shown still more strongly by a comparison of their nests, eggs, and young. The young birds in their first plumage have in both cases that livery of tawny brown, spotted with dull ochre, which is common to many other species in the same group, and is held to represent the plumage of the common ancestor of the tribe before the differentiation of the present kinds. The nest of both birds is a very loose structure, chiefly of dry leaves packed together, but provided with a neat and comfortable central hollow, which is lined, as a rule, with horsehair. As the robin's nest is almost invariably fitted closely into a hole on all sides but one, the modification of shape thus caused tends to conceal its likeness to that of the nightingale, which has a more open situation, and is not built, therefore, in the same lopsided manner. But when attention is directed to the comparison, the similarity in the choice and arrangement of the materials becomes obvious. At first sight, again, the nightingale's egg, with its uniform tint of olive, seems quite unlike the tawny-spotted robin's egg, and every other British bird's egg as well. Yet there is a fairly common variety of nightingale's egg in which the usual uniform colouring breaks up into deep tawny mottlings on a slightly paler ground of the same tawny hue. This variety has a distinct resemblance to the

darkest variety of robin's egg, though the indications of relationship are not so strong as in the nest and the young.

The birth of the young nightingales brings the end of the old bird's song, except for a few rare and casual notes. The cocks are regularly employed henceforward in helping to feed the four or five naked nestlings, lifting on wavering necks their gaping mouths and blind, goggle eyes in the direction of any stir that they take for their parents' coming. In contrast with the supreme music which the cock poured forth before the hatching of the eggs, his utterance is now almost the slightest and harshest among all the bird-voices of the grove. Even in his time of song he would sometimes utter a low, dull croak to express uneasiness or resentment at an intruder. This frog-like cry, alternated with a short, piping note, which is almost equally inarticulate, is anxiously repeated by both birds when they consider that the young are threatened, either in the nest or after they have left it. By the time that June is a fortnight old, this dumb undoing has fallen upon all the nightingales, except for a rare straggler or two still occupied with a second nest after his first was destroyed, who utters a few half-hearted snatches among the silence of his rivals of May. The whitening of the first elder-flower forecloses the music of the year; and the last of the blackcaps and thrushes sing thinly in an emptier ether up to the falling of full silence in July.

THERE are few hours of the day, and fewer still of a brief midsummer night, when some sign of the bird life that abounds in the woods and river meadows about Oxford cannot be seen or heard in a college quadrangle. The birds penetrate to the very shadow of St. Mary's spire, following the willows among the stream-sides, or passing on from one garden to another ; and although many cling to the leafier gardens, with their quiet shades and ancient timber, there are a few which do not shrink from settling and bringing up their young among the walls of gravel quadrangles, or where the scanty verdure of a few trees or a screen of bushes relieves the grey-ness of the stone. Even in mid-November, when the blood-red sheets of Virginian creeper are mingled with thin streaks and stains of early snow, many of the birds of the quadrangle can be seen daily about the buildings. But it is in the eight weeks of the summer term, when the human life of Oxford is fullest of gaiety and vigour, that they are continually busy about their secret nesting-places, and add an under-current of resurgent activity to the crannies of the time-washed stones.

When term begins in mid-April the sudden incursion of life overtakes the jackdaws in the delicate business of nest-building. Though the jackdaw

breeds nowadays exclusively in holes and crannies, it still retains the habit of building a substantial nest with a stick foundation, like those of the rook and crow and its other relatives which nest in trees. In obedience to this traditional obligation, the two or three pairs of jackdaws which haunt the quadrangle undergo much earnest labour in collecting sticks in the neighbouring college gardens or in the meadows, and transporting them across the roof-tops, often by singular feats of flight, to the difficult recesses which they have chosen. For the pairs which nest somewhere on the high plateau of the roof, and are espied but fitfully among the precipitous recesses of the chimney-stacks, it is a comparatively easy matter to drop anchor in the desired haven, once they have fairly risen in air with their awkward burden. But the enterprise is far more difficult for the two birds which nest behind the rain-worn statue that watches in its high niche above the quadrangle, softened by gathering years and the west winds beating from the Cumnor Hills. Their nest is hidden in the space behind the protecting figure ; and it is no simple matter for the laden bird to drop from the parapet of the roof down half the depth of the wall, and then to check itself at the right moment, without losing its balance and being forced to let the stick fall from its bill. The problem varies considerably, according to the shape and weight of each stick. Sometimes the bird seems fully master of its material, and drops to its nesting-place by a single skilful flight ; sometimes it is forced to alight upon the patient shoulder, and to lay down

a stick of unwieldy balance while it holds much garrulous communication with its partner before seizing it in a new grip and making a fresh attempt.

When the stick is once dropped the failure of the trip is complete; for jackdaws, like rooks, seem never to pick up the material which they let fall while building, but always go afield for a fresh supply. The liveliness and persistency of the jackdaws in their labour of building are constantly amusing; and the work is less strictly confined to the early hours of the morning than is the case with many other birds. The nest is finished by about the end of April, and for more than a month the jackdaws become less conspicuous within the four grey walls. Then, in early June, from behind the worn shoulders of the statue there pulses daily louder the querulous chiding of new life; and we see that the two birds are once more making constant journeys in and out of their cranny, though far more quietly and unobtrusively than in the now distant days of April. The strident rhythm of the young jackdaws calling to be fed increases with the shortening shadows of midsummer, and underlies the quieter moments. Then early some morning the young birds leave their nest, the whole party wanders abroad into the thronged June world, and the niche behind the statue is silent. In the bird-life of the quadrangle the first absence of that pulsing cry brings the same presage of summer's approaching decay which is felt in the outer woodlands, at the same moment of the summer, when the nightingale ceases to sing.

The plumage of the birds which haunt the quadrangle displays a peculiar harmony of colour with the grave tints of the ancient roofs and walls. In the elm-groves and by the stream-sides without, even the temperate genius of nature under the English skies spares touches of brilliant colour for the kingfishers that flash by the blossoming hawthorns, and the redstarts and woodpeckers in the willows that border the shining hayfields. But in the college quadrangle all birds are tempered to some clean but sober livery of black, or brown, or slaty grey, that blends in soft gradations with the cognate tints of the crumbling stone. A few yards outside the gate the blue titmouse rings its chime in the bare laburnums, and the great titmouse gleams in the elm boughs with its yellow breast, as it utters the two sharp notes which call up the early spring. Both these birds nest not infrequently in Oxford gardens; but the only member of their tribe which is familiar in the grey stone quadrangle is the sober cole-tit, with its body and wings of grey, and black and white markings on the head. The cole tit has all the gymnastic vivacity which pre-eminently marks its family among English birds, although it lacks the vividness of plumage of many of them. It finds a very paradise of intricate footholds among the interstices of the carved and crumbling stones, and fills them through all the year with its curious life.

Like the wren and other small but indefatigable birds, the cole tit has the power of making the human observer survey the world of its pursuits

from its own microscopic standpoint ; and it is amazing how much detail and lively adventure can be crowded into the inquiring journey of a pair of cole-tits in springtime over a few square feet of stone in any corner of the buildings. These titmice can find a passage through crevices that seem far too narrow to receive them, small as they are ; and the holes which they choose for nesting are often the merest chinks, apparently impassable for a mouse. In retired corners of the college buildings there cling at various altitudes stray lengths of rusty wire, coated with washings from the crumbling stone, that surprise the eye of the student of university customs with unmistakable evidence of a former instalment of bells. These wires hang now as emblems of ancient silence, and the scouts are dust who answered or ignored their appeal. But nature, in her long leisure, turns all things to some new use ; and the holes pierced in the walls for the bell-wires, and enlarged in many subsequent winters by the fretting mists and rain, now provide the questing titmice with the snuggest of all their nesting-places.

The cole tits live out the greater part of their lives in that unobtrusive indifference to man which at times conveys the impression that, with their minutely concentrated vision, they fail to distinguish him. Only when they fear that their nest or young are threatened do they suddenly display intense consternation and anger at the movements of the giant form. But all larger birds in inhabited places are keenly aware of human identity, except before they are fully fledged ; and

the glossy starlings that nest in larger holes and crevices about the quadrangle appear seldom oblivious of observation. When their nests are built in April, the starlings pace anxiously along the water-pipes, or stand on the ridge of a gable writhing their bristled and sinuous necks before slipping into their chosen crannies with the grass-tufts or long straws which they collect outside the walls. Only in the quiet of the early morning they lay aside their ineffective caution, and sometimes fly directly to the nest. Even greater wariness is shown when they are feeding their young in May. Hundreds of times a day they return to one or other of their points of vantage at a little distance from the nest, with a morsel in their bills, till they dart at last to their hole, and fly straight away a moment later, with the low note which they utter on launching into the air. When the cock bird mounts to some pinnacle on March or April mornings to pour out his curious medley of a song, he abandons himself discreetly to his rapture, and turns an eye on the posture of the world about him before every fit of expression.

So many imitative fragments occur in most of the starling's chattering monologues, that it is often hard to distinguish between the bird's own song-notes and those which it has picked up from its neighbours. In the course of their musical recitations these starlings will at times break out into unexpected reminiscences of other times and places—secrets of the green Hinksey solitudes, where they go to gather food in the depths of the springing hay.

For among the imitative notes which the starling will now and then include in sudden parentheses, occur clear renderings of the laughing call of the green woodpecker and the twisting cry of the plovers that tumble above the meadows in spring. The woodpecker is very rarely to be heard within earshot of the starling's nesting-place, and the peewit never ; so that the repetition of their proper cries, sometimes weeks later than the peewit's, at any rate, has ceased in its natural surroundings, has a singular and almost uncanny effect when it occurs among the chatterings and pipings which the starling lets fall from the gable.

The music of the true song-birds is heard within the quadrangle only from the blackbird. One dwells with his mate in the hollow behind the single line of bushes ; and he rises to the boughs of the single sycamore, both in day-time and before the dawn breaks clearly, and pours forth for a few moments the full richness of his song. The scanty belt of verdure provides shelter for only this one pair of birds among all those species which demand green boughs or undergrowth to dwell in ; and with so scanty a veil of protection the life of these two blackbirds is even fuller of riot and alarms than is general with their excitable kind. Though the habits of the blackbird and song-thrush are in many respects closely similar, it is characteristic of a certain distinction in their requirements that this nook where scanty bushes skirt ample walls is colonized by the blackbird and not by the thrush. For, in spite of the blackbird being the shy and more

fugitive of the two birds in the open country, it will nest more readily than the thrush on the face of a rocky bank, or even among the walls of an outbuilding or cowshed, if the cover of a hedge-side or garden is not far distant ; and this slightly shaded corner of the quadrangle provides it, as it were, with the utmost limit of cultivation on which it finds it possible to sustain life.

In so exposed an outpost, where cats hardly provide more cause for alarm than the eccentric inroads of humanity, the blackbird's heart is never sufficiently secure to permit him to meet the south wind and sunshine of full spring with the tireless warbling of his brothers in their own country. The most familiar note of the blackbirds in the quadrangle is the vociferous uproar, accompanied by excited flights and rushes about their special precincts, with which it is the peculiar custom of their race, in town and country alike, to notify that the sun has set and that it is their intention to go to bed. In summer this clamour echoes to the sun-tipped gables while the latest diners are coming out of hall ; it is associated in November with the wet hour of falling darkness, when the oarsmen come home from the river. But whenever this singular tumult rises, according to the season of the year, for about a quarter of an hour the two undaunted blackbirds are proclaiming to the indifferent walls their traditional evening challenge.

In the midsummer nights the calls and murmurs of birds are never far away. When quiet gathers after midnight, the cries of hunting owls and the

voices of wakeful water-birds by the river-side float in from the heights and spaces of the outer meadows. From an upper window, the growing broods in the depths of the nearer walls can be heard fitfully stirring and complaining under their light veil of sleep. The air grows cooler in the space before the dawn, and is tinged with the dew of the fields. An hour passes; then suddenly, very near at hand in the darkness, a single golden strain rings out and closes clearly. It is the blackbird challenging the dawn, according to his habit; but after his single call, for a little while the silence and the darkness dwell again. While a faint gleam of grey comes to the upper sky, the breeze that presages the light passes coolly, and the air is once more still. Then the dawn gathers fresh and clear, and the larks in the meadows beyond spring singing in the heavens. The blackbird waiting on the sycamore bough pours out a freer stream of song, and the starlings strut forth erect from their hiding-places, clinking and chattering together upon the gable-ridges in the clear morning light.

WHERE roads and lanes must be widened for modern traffic, there is a risk of obliterating many a curious testimony of the past. The broad grassy fringes which often border the old main roads have in many cases grown up since the disappearance of the coaches and stage-waggons. With the reduction of road-borne traffic which followed the development of the railway system, it became unnecessary to keep up so wide a metalled thoroughfare; and as soon as men ceased to scarify and beat the surface, nature covered it once more with her unfailing mantle of turf. But the green fringes of many of the high-roads, and of nearly all the country lanes, are probably much older than the coaches, and date from the days before the enclosure of farm lands became general. When the first hedges, walls, or dykes were run beside the roads and lanes to divide them from the fields, they left an ample margin for the vague, rough track, often running in several parallel lines, as we still see in the case of unmetalled cart tracks across moorlands or unfenced downs. When the made road settled later into a single bed it still preserved, in many cases, the irregular green border beneath the hedgerows which had been spread for the rougher trail.

This origin of the turfy roadside fringes is perhaps most clearly indicated by the unusually wide margin which is frequently noticeable in damp, low-lying ground. In such places the road to-day is often separated from the hedgerows by a dozen or twenty yards of grass, fragrant with mint in dewy mid-summer evenings, and bright through September with willow-herb and yellow fleabane. In such marshy spots, where the waggon teams foundered deeply in the unmade track, each would diverge more widely than its predecessor to left or right to gain the advantage of a new surface, until the bad spot was passed. The wetness of the soil in such spots gave them little value in the farmer's eyes, and helped to preserve them with their native vegetation and animal life. The road fringe marks to-day the breadth of the trail marked out by the wheels or pack-horse hooves of Stuart or early Hanoverian times. The narrowest of all our lanes are those which had already bitten deeply into the soil when the country was first enclosed, so that the hedgerows were planted on the very brink of their shady hollows. Instead of level fringes of turf, such lanes have a still richer adornment in the wild gardens of moss, ferns, ivy, and many flowers which centuries have ripened upon their banks.

The wild flowers of many rough roadside fringes are the surviving representatives of those which once blew freely over the whole breadth of what is now the farm-land on each side. But by the border of many well-used country highways nature

has selected a special group of characteristic wayside plants, which were almost dust-proof until the motor-car made a new thing of dust. Except for the green grass itself, these characteristic plants of the wayside turf are either dust-like in colour or marked by a wiry hardihood of growth which fits them even more thoroughly for life in the highway's heat and glare. The common white clover is one of the most persistent flowers of the roadside fringe; and the slightly tarnished white of its blossoms is perfectly fitted for giving variety to the dull green of the turf, while risking no such brightness as the dust would swiftly destroy. Even more thoroughly at home in the dry gutters and at the edge of the thirsty sward is the creeping silverweed, with its fringed, hoary leaves and golden, strawberry-like flowers. This hardy little plant is wonderfully contrived to clothe the dried mud of the summer roadsides with a light film of sun-loving vegetation. It flings its stems along the surface of the earth in May, and opens by mid-summer its flattened golden blossoms in the full eye of the sun. Its delicate leaves have the same grey, dust-like bloom which is borne as a protection by many plants of the hottest hillsides and shingle-ridges, such as the lavender, and the olive, and the horned sea-poppy. Among the most typical of the wirier plants of such dusty waysides are the hedge mustard, the vervain or wild verbenä, and the purple-flowered bartsia, which lifts by the August and September roadsides its comb of blossoms all set on

one side of the stem. The tough texture and scanty foliage of all these plants make them almost independent of moisture ; and though they may be covered by the dust of arid summers almost continuously from midsummer until Michaelmas, one or the other will be found stubbornly tinging the roadside with its sparse blossoms through the hottest weeks of the year.

In their long freedom from disturbance the borders of many country roads have gathered a diverse collection of old monuments and landmarks which add much to their present attraction. Parish and county boundary pillars, cut from wood or from stone, according as either material was most accessible, remain from earlier days to give the interest of topographical precision to a journey. On many exposed hillsides the prevailing storms of a hundred winters have almost wholly defaced the incised lettering on the southern or western face, while that on the opposite side can still be distinctly traced by touch if not by sight. Where the wooden posts have been repainted at a later date, sometimes the newer lettering has in turn been washed away, and reveals in part the old inscription beneath it. The comparison often shows how the accepted spelling of many parish names has varied even in the space of a couple of generations ; and we are reminded once again how unstable have been many of the commonest elements in English place-names, and how cautiously we need to argue if we attempt to trace them back to their original significance.

The material of these old mileposts and boundary stones is as closely related to the underlying soil as the trees and flowers in the hedgerows. In counties where stone is abundant it was naturally turned to this use, as to many others. But in districts where the pits and quarries yield clay, sand, gravel, or stone in thin slabs, like the well-known Kentish rag, the most convenient material is wood; and only the great trunk roads are found provided with stones to mark the miles. Just so, in the neighbouring village churchyards, only the well-to-do members of the community at an earlier day have stones to mark their resting-places among the wooden memorials of their fellows. In the old forest region of Kent and Sussex some mileposts remain which reflect in a yet more close and striking manner the characteristic products of the soil. This tract was for centuries the chief centre of English iron working. It still abounds in timber; but there is little or no stone which is suitable for fashioning into pillars. The mileposts, therefore, are of oak, with rude roman numerals of wrought iron fixed to their faces. The parallel with churchyard monuments is continued by the survival in the same part of the country of some curious old sepulchral slabs of cast iron.

The vegetation that clothes the waste strip beside the road is in many cases a relic of antiquity much older than any of these roadside posts and stones. Where centuries of agriculture have changed the surface and products of the surrounding

fields, a remnant of the original face of the land is still preserved on the border of the highway. By the pale roads that cross the high sheep-walks of the Cotswold Hills there are wide strips of primitive pasturage that grow brilliant every year after mid-summer with league-long gardens of wild flowers. Ages of grazing and culture have brought the blossoms into abeyance on the other side of the dry, stone walls ; but here, protected from all disturbance in the loneliness of the ample landscape, they wash the roadside with their clear, upland colours, and cherish in the herbage and hollows their own bird and insect life. The mellow limestone walls are crowned with blue masses of the great meadow geranium, waving in the summer wind against the long sweep of the sky. The same beautiful blossoms shine in many patches on the turf below, often gaining an added lightness and brightness from a background of reddish soil and yellow stones. The turf is thickly spangled with golden rock-roses, purple heads of thyme, and other minuter flowers. Tall belts of fennel draw clouds of butterflies to their yellow tops ; and everywhere upon the grasses runs the bloom of the two common bedstraws, like white and yellow foam.

Where the scenery and life of the country are still but little changed by man, the fringe of the road brings its details to the traveller's very feet. In July and August after nightfall the grassy border is a favourite haunt of glow-worms. They shine beside his road with a light that varies from a blue-

green shimmer in the cooler weather to a deep red glow, like the butt of a burning cigar, in the nights of July heat. In winter the snow by the roadside bears the traces of each bird or animal that has crossed it, in haste or at leisure, since the hour when it ceased to fall. Besides the well-known prints of fox, rabbit, or rook, the passer-by can note where the sparrow-hawk has plucked and eaten some brightly coloured greenfinch, or where a pheasant, suddenly startled from the crest of the bank, has struck down upon the soft snow in fright, leaving a spread-eagle print. Where a quiet road runs through deep tracts of woodland the strips of grass at the sides attract the same life of bird and beast as the open ground of one of the inner glades. On the shaded turf of May, softly bright with purple ground ivy and prunella, the nightingale flits down to feed from the holly-bough like a smaller and shyer thrush. Red stoats and weasels press undulating across the roadway on some savage quest. And when twilight falls, and the nightingales are answering one another from tract to tract of the wood, grey, moving shapes, like the dusk become concrete and animate, reveal the hedgehogs blithely trotting on the turf plots and searching with keen, hairy faces for the creeping life of the night.

Where space is gained in narrow lanes by cutting back the banks, the passing of a few years will often clothe the fresh surface with new flowers, if it is not cut at too steep an angle. But if the new slope of the bank is so near the perpendicular that

the surface is always slightly crumbling, few plants will be able to find a foothold, even if the inclination allows the access of sufficient light and warmth. The primrose-covered banks which are so familiar on English highways and byways are not only the most beautiful of all borders to our roads, but are hardly excelled among all the scenes of spring. The slope of the banks provides for primroses and other spring flowers the warmest of sunshine and the fullest protection from the wind. There is no more typical picture of the spring awakening in England than some bank in a sunny lane, where the primroses are opening with the dog-violets and wood-sorrel, and the eye and throat of the nesting robin gleam in the niche beneath their roots.

Rarer, but hardly less attractive, are the watery borders of the lanes in the land of the drowsy-flowing Severn renes. Beyond the grass-fringe, and beneath the lofty hedges, there flows a deep current of clear water with a motion that just waves the green filaments clinging to the submerged stems, and lightly stirs the fins of the hovering minnows. The summer vegetation of these renes is stately and distinctive, and peculiarly rich in plants of aromatic fragrance. The smell of mint dwells over them by day and by night, and it is constantly mingled with the sharper scent of wild celery, which lifts a screen of strong, succulent branches when the golden irises have failed. The fertile soil is uncongenial to rushes, and apparently also to most kinds of sedge. Such hungry vegeta-

tion is rare by the waters of these lanes ; they give birth in their place to blue speedwell, and scented meadowsweet, and white convulvulus, which wander far in the hedge under the yellow apples of September.

ON the banks and backwaters of the Thames the vegetation has a diversity and richness which are peculiar to the larger water systems. Smaller rivers are seldom bordered by a strikingly varied river flora, except when they are themselves tributaries of some larger stream, and thus possess communication with a wide network of waters. Such a river is the little Swift, which flows past Lutterworth, in Leicestershire, to join the Warwickshire Avon not many miles away. In spite of its small size and the comparative poverty of the land flora in the district through which it flows, its water gardens are surprisingly flourishing and varied; and this unexpected richness appears to have been produced by the development of its water flora in long association with that of the verdant Avon and all the other streams which drain from the western Midlands into the Severn. A noticeable contrast is presented by the scanty flora of many other small streams, such as those of the Sussex Weald, which reach the sea in a few dozen miles, and have connexion with no large inland basin. Their banks may be equally well clothed; but after the eye has caught the first brightness of their June irises, or drunk the deep purple stain of their August loosestrife and willow-

herb, it searches almost in vain for other familiar blossoms. The wider the river system, the more secure is the stronghold which it has long provided for its native plants, and the greater the variety which it distributes through distant waters. The Thames is the greatest of all such reservoirs and distributors of plant life; and the wealth of its capacious watershed is amplified by the warmth and fertility of its bordering meadows.

The dense screen of sedges, reeds, and blossoms which fringe so many reaches of the Thames in summer hardly begins to rise until the early days of May, when the primroses are already fading in the higher copses and the bluebells are nearly at their prime. The warmth of spring strikes slowly through the mire of the river; and the same abundant moisture which forces the river vegetation to such prodigal luxuriance in July keeps it sluggish while the nights are chill. The earliest moorhens' nests are built among the old dead reeds; and it is not until April is well advanced that the first green blades of flag and bur-reed begin to thrust from their crooked roots, washed bare at the water's edge. As the screen of vegetation begins to rise, the broad blades which chiefly compose it present a distinct though delicate contrast of three shades of green. At this early and flowerless stage it is the colour of their leaves that chiefly distinguishes the pond-sedge, the bur-reed, and the common flag or iris, which build up, with beds of slenderer rush, the green defence and adornment of so many miles of the summer waterway. The brightest and

yellowest green is that of the bur-reed, which in July and August lifts high its branching flower-stems with their heads of silver burs. The next darkest shade is that of the sword-like iris, slower and more stubborn of growth. The leaves of both these plants are often waved or ribbed like the sandbanks beneath the willows, apparently from an inequality in the rates of growth of the mid-rib and the outer margins, probably due to frost. The deepest and most hoary green is that of the sharp pond-sedge, which droops a little later its dark tassels of grass-like flower.

These three abundant plants form thick beds along most reaches of the river, and are interspersed with several other species of sedge-like water-plants which are less common, or less conspicuous in growth. The tall tapers of the giant rush mount singly above the slopes of sedge, or form broad beds amid the water in the lee of the promontories and eyots. Its pithy stems are as thick as a man's finger, and form a favourite food for water-rats, which fell them and cut them into floating lengths, both to eat and to rest upon while eating. On some of the tributaries in winter half a cart-load or more of these floating lengths of rushes can sometimes be found lodged against a dipping hawthorn or willow-trunk, and choking all the surface of the stream. Where the beds wither as they stand, the swifter currents set their dried stems pattering together in day-long talk. The stateliness of growth which distinguishes the giant rush is shared by many other plants of the

river-side. The giant rush belongs to a different family from that of the common rushes, in spite of their general resemblance. It is the real bulrush, though this name is now generally applied to the great reed-mace, which is hawked in the London streets.

Most of the English names of these tall plants are confusing, and well devised to obscure their real relationships. Not only is neither species which claims the name of bulrush really a rush, but the scented rush, or sweet sedge, is closely related to the arums, and is neither rush nor sedge. The flowering rush belongs to a different family again, and the bur-reed is not a reed, but a close ally of the distinct reed-maces. Though the common names are so involved, the plants themselves are easy to distinguish. The scented rush is now abundant along many reaches of the Thames, though it has the reputation of being rather rare. It is easily recognizable when in flower about midsummer by the long spadix which protrudes at an acute angle from the stem, and in shape is not unlike the central column of the arum lily or the wild cuckoo-pint. The whole plant has a strong and sweet perfume when bruised; if a boat is driven into the midst of a bed of scented rushes the fragrance of the crushed blades and flower stems rises all about it on the air. The flowering rush, which blooms in June and July, is one of the most beautiful of the river-side plants, with its cluster of pink blossoms at the summit of its lofty stem. It is by no means rare on certain reaches of the river. The reed-mace grows more often in the

stagnant water of pools beside the river than in the running stream. No plant adds so keen a touch of ruin to the winter scene as the reed-mace lifting its torn and fluttering seed-heads above the beaten sedges.

The true reed is another plant which brings a suggestion of wildness and seclusion into every landscape, from its close association with the loneliest fens and wastes. Rising late in May, it is easily recognizable by its tall, grey-green blades, grey plumes of blossom, and cane-like stems. Country boys still cut harsh shepherd's pipes from these hollow stalks, slitting them so as to leave the inner membrane to vibrate when the pipe is blown. True again to classic precedent, they also cut arrows from the reeds for a child's toy bow, notching the tough shaft for the cord and bedding a nail or wooden splinter in the pith of the arrow's point. Both these crafts must be an inheritance from great antiquity. The same strong though pliant stems form the usual supports of the clinging nest of the reed-warbler, which hangs above the water, lapped to the upright reeds. The summer snowflake is another distinctive blossom of the Thames reed-beds in May, when it opens its cluster of snowdrop-like blossoms at the top of its slender stem. This well-known flower of old-fashioned gardens is probably not a native of Britain; but it has been naturalized in many places along the Thames and its tributaries, and is so abundant by the side of the drowsy Loddon that it is known as the Loddon lily.

The plant life of many of the backwaters and shallow by-pools of the Thames is often richer than that of the main channel. The home of some of the scarcest and most beautiful species in the river flora is in the sleeping dykes and pools that are seldom quickened with an active current except in floods. These quiet and shallow waters foster an earlier activity in plant life than the banks of the outer stream. Before the end of April the water-violet lifts above the surface its light clusters of pink blossom on leafless stalks. The fibrous leaves are thickly matted beneath the water. Only in the colour of its blossoms does this plant even remotely resemble a violet; it is one of the primrose tribe, though on a casual glance it rather resembles the April cuckoo-flower of the meadows beyond its pools. In the same pools later in the summer the rarer bladderwort raises its yellow spikes, and the yellow villarsia floats its fringed blossoms. Here, too, as well as by the calmer shores of the outer current, the tall water-plantain opens in July its pink, three-petalled blossoms among its large leaves, which are like those of a common plantain much magnified. The same ditches produce the scarcer arrowhead, with its curious, barbed leaves and pink, three-petalled flowers of larger size. On many oozy shores the forget-me-not spreads broad banks of brilliant turquoise blossom, often contrasting vividly with the parched grass of the marly meadows above. The wild forget-me-not is a true aquatic; its whole habit is larger and more luxuriant than that of its

near relative, the scorpion-grass, which is the wild original of most of the forget-me-nots grown in gardens, but has a much smaller and less brilliant blossom. The scorpion-grass is as thorough a native of dry soils as the true forget-me-not is of wet ; but it often finds a congenial foothold by the river on those steep little earthy cliffs where the kingfishers bore their nesting-tunnels. In the brisker currents of some of the narrower backwaters, or where a little brook runs down to join the river, the brooklime, or water speedwell, gleams with its smaller blossoms of deeper sapphire blue. The name of water speedwell is also borne by the similar but larger species, abundant in many of the Thames-side ditches, of which the flowers are still smaller and pink.

Besides the many tall and slender species which are especially characteristic of the long, green walls and shadowy colonnades of the river channels from early May, a variety of broader-leaved and more profusely blossoming marsh plants luxuriate by the water-sides and in the shallows. One of the earliest and largest of these is the common comfrey, with its rough leaves and bell-shaped blossoms of purple, pink, or white. Plants of three separate species could not do more to brighten the water-side in the earliest weeks of summer than this resourceful flower, which so often strews the swollen current with its fallen corollas under the storms of May. Blossoms of all three colours are equally common ; but each plant is constant to one choice, so that the water-side is diversified with a bolder contrast

than if all three shades were mingled on a single stem.

As midsummer draws over and the time of the irises is done, the plumes of the meadowsweet rise pale and heavy-scented among the undergrowth on every stream. With the meadowsweet comes the tall pink valerian, and here and there on the river brink and the banks of the eyots the stalwart yellow rue. The large heads of feathery blossom borne by all three plants are typical of the Thames banks in July. As the dog-days darken the foliage of wood and meadow, the long, green lines of reeds and sedges by the water-side give morning by morning a cooler refreshment to the eye. Now the heats of summer draw forth a fuller vegetation from the river-channels than answered the suns of June. The water-dock unfurls from midsummer onwards its high, green banners above the calmer shallows; and the leaves of this great plant give an aspect of almost tropical rankness, such as is not to be seen upon dry land, to the vegetation of the stiller pools and backwaters.

The height of the river's flowering-time is reached in the July days when the hay is carried from the bordering meadows and the sallow bareness of their stubbles frames, in the sharpest contrast, the beds of flowering water-lilies. First comes the smaller yellow lily, with its poppy-like seed capsule and smell of anise. It is not only more widely diffused than the white lilies, but has a considerably longer flowering-time. It heralds the white lilies before midsummer, and lingers on the August waters

when the white cups have sunk below the surface and the black swifts sweep and scream on the eve of their early going. Then the banks are lined with the duller and more monotonous purples of loose-strife, willow-herb, and rank hemp agrimony, which persists until the darkening of the sun.

IN fine weather early in July the luminousness of the English atmosphere is at its height. Though midsummer is past, there is still no perceptible shortening of the evening twilight ; and the gathered warmth of advancing summer fills the sky after sunset with a clear and deeper glow. Light dwells on the northern horizon all through the nights of June ; but sometimes by the beginning of July it mounts in the heavens with a luminous depth of colour far excelling the cool midsummer gleam, and shines till it is merged in sunrise. The whiteness of the midsummer nights is most marked as we travel northward, towards the confines of the unsetting summer sun ; but when clear, dry weather matures the glows of July their colour has a depth and a self-dependence which make it more impressive than the mere persistence of daylight and the nearness of the sun in midsummer skies.

Such nights are born of firm and radiant days, with a tempered air devoid of dampness and the harsh east wind. They carry on the glory of one evening to another morning, and the season has the grandeur of a natural festival. We realize by the rarity with which such displays of brightness occur in a long series of summers how exceptional are some of the displays of our climate, and how

some of the scarcer and more splendid manifestations may never repeat themselves within the span of a human life. Great gales and floods extort a memorial from human suffering and loss; but milder events of nature may pass almost unregarded, though no less august and rare.

In June and early July the most constant lights of the night are the pale midsummer blossoms. The glory of the moon and stars is cut short by late sunsets and early dawns; and the Plough, which is the genius of night in our northern skies, has scarcely begun to swing low across the north, as best we know it, before it is sponged out by morning. But as soon as the twilight falls, whether the night be fair or cloudy, the white flowers shine forth in the meadows and about the woodsides, and earth stands lit till morning with their drowsier stars and moons.

Broadest of all these blossoms are the clustered discs of the elder, which hang with a steady light in the nights of unstarred darkness, and toss like censers in the woodland when a damp wind brings up the cloud. The last wild roses gleam in smaller constellations among the elder's clustered moons. Even by night, and independently of any waft of fragrance, we can tell the scented pink rose from the scentless white one. The white rose shines hard and opaque in the dusk, while the pink one—more transparent even by day—has a luminous and tender light. Beneath these blossoms in the hedgerows stand the smaller and whiter discs of the tall cow-parsnip, which rises in shady places after the

lighter blossoms of the cow-parsley have vanished in early June. Its blossoms loom with a duller and colder light than the heads of elder-bloom; where it mingles with their lowest branches by the hedge-side, the lights seem fading in the cool haunts nearest earth. By the stream-sides, and all across the meadows, where the reeling of the grasshopper warbler sounds through the dusk, the plumes of meadowsweet gleam soft and luminous like the elder-bloom. All these clustered heads of small blossoms have the same kind of luminous radiance in the night; they are more conspicuous from afar than single corollas, and are softer when seen close at hand. The tall white campion, growing in the corn and on the banks among the grasses, shines hard and firm, like a blossom cut from alabaster; and when we move away, it quickly vanishes into the night.

These July flowers are the motionless lights of the night; their massed constellations swing in no orbit, except when an uneasy wind of midnight draws a pendulous blossom of elder to and fro across the face of the dark wood. But the dusk is also peopled by the white moths. They droop to the white clover blossoms out of the enveloping obscurity like the meeting of earth and air made luminous. In the last hayfields and among the bents of the pastures the ghost swift moths keep up, between nine and ten at night towards midsummer, their strange, vibrating dance. The males are long-winged moths of silvery whiteness; they choose a station a little above the grass-tops, and swing

rapidly to and fro through a space of four or six inches, in ecstatic activity like the mayfly's above the stream. Sometimes, but less often, the female joins in this dance. She is larger than the male, and her wings are of gold instead of silver. The swifts are so intent that they can sometimes be caught with the hand as they oscillate on their chosen station. The intensity of the July nights finds its expression in the dance of these silent moths, just as the dusk of early June thrilled to the song of the nightingale. The song-thrush still sings after sunset on glowing nights, and the sedge-warbler babbles like a fitful weir among the watery vegetation. But the profusion both of blossom and music is already diminishing in July ; and the life still fervent in the night gains solemnity from the gathering silence and the dispersed white bloom.

There is a personality in these gleams of the July night which makes the spirit of nature at such a time very close to the instincts of humanity. In midwinter the whole landscape is merged in the glory of the over-riding moon ; the abated life of the earth lies inert in that comprehensive splendour. In July the moon eclipses and disturbs much earthly life ; the gleam of the blossoms is dimmed, and the white moths shrink from its mastery. Our world is most at home under the canopy of its own nocturnal glows or the moist cloud shrouding the stars. In the steady dusk each ghost moth has his own station and his own ardours ; each disc of elder blossom hanging on the hedge of the hayfield

has its own place in the harmony of summer life, and shines with its own vital purpose. This sense of separateness and identity is congenial to man's earthly instincts ; and his kinship to the life around him quickens into a wide and mysterious sympathy in the fields on a dusky night.

Even by early July the sense of deepening summer is heavy on the landscape, though the year does not fall to its full stillness until all the elder-blossoms and wild-roses are gone. Three weeks earlier, a few nightingales still sang on strongly until an hour after midnight ; while once or twice in a night a hidden singer would fling a few strains suddenly from the heart of the thicket as vehemently as in the nights of May, and then sharply close. Now the nightingales sleep ; and though the last thrushes and blackcaps still call and warble up to sunset among the blossoming limes in the garden, they will be silent before the lime-flower fades. A week or two ago the corncrakes still called endlessly after sunset in the meadows, while high above them the snipe circled on into the dusk with the sharp, monotonous cry which they utter persistently on the wing when the young are fledged. By July, in the meadows of the South of England, both cries have usually ceased ; and every night of the grasshopper warbler's reeling song may be the last. But deep in the woods the nightjar still utters indefatigably its own reeling murmur, louder and deeper than the grasshopper warbler's, but with the same drowsy and unwearying burden. The grasshopper warbler's song is so like the whirring of a metal

reel that it is easy to mistake for a moment some nocturnal fisherman for the bird. The reeling of the nightjar has a hollower note; it is more like the sound of one of the larger wooden reels when it has been dipped by chance in the stream. It has also a catch and change of tone like the murmur of a far-off threshing-machine in autumn, or an airship prowling beneath the stars. This murmuring burden is the only song in the woods; but among the meadowsweet by the stream-side the sedge-warbler still babbles musically on, seeming to grow more wakeful in the darkness as the nights grow warmer. As we listen where the cool air from the stream wanders up through the warmth given out by the hillside, the bird echoes notes of the day, and voices of the early summer. It mimics the call of the chaffinches that nested in the stream-side alders, and the sharp chirp of the sparrows that gather and bicker by daylight among the crannied willows.

Calm and filled with summer as are these nights, the voices of the birds in the stillness bring a sense of the fleeting of time. Though the light never fades out of the north, the stir of noonday seems already far away, as the cries of the quarrelling sparrows are given back in the songs of night. Our sense of time largely depends on the constant variety and contrast of normal experience; and here, in the dark woods filled with one note, its ordinary limits become vague. As the long murmur of the nightjar changes pitch at last and falls to a deeper tone, it seems to mark a new epoch of

time, in which nations might wax and thrones perish, in worlds of daylight far away. So might the despair and triumph of man's strife alternate upon the immortals' drowsy ears. Though the night is so brief, there is always an unmistakable half-hour in its heart when the old day is cast aside and a new one is born. After the last nightjar or nightingale has stopped singing, and a little before the glow in the north begins surely to brighten, there is a sense of change in the night. The darkness grows cooler; and often a new drift in the currents of air makes an almost imperceptible difference in the faint and distant sounds which underlie every silence. Then comes the wind that leads up the dawn; sometimes a little wandering breeze, filled with a new scent of morning, and sometimes a restless blast. In settled summer weather, when both the old day and the new are equally hot and calm, sometimes a cold east wind will toss the trees for half an hour at dawn, and die down before sunrise. This wave of air racing round the world before the sun is the real boundary between day and day; and even when it is only a breeze that makes a moment's sighing in the oak-tops, it pours the same magical coolness and freshness in place of the old scents of night.

Through all the peace and all the changes of the night the activity of nature works with unresting power. Under the dense leaves, from bough to bough, come pattering downwards the unripe chestnuts and beechnuts that are rejected before autumn ripens the crop. In the first light of dawn a yellow

leaf flutters downward from the hawthorn ; though its young berries have scarcely begun to swell, and months must pass before they wax red in November, unhasting nature is already preparing to strip the tree. The busy feet of mice rustle among the withering bluebell stems ; and the silence only serves to make their quick gnawing audible, as they fret the fallen seeds. To man the night breathes of rest, even when he keeps vigil among its shadows. But the earth does not sleep ; and in the shadow of the trees a new fungus parts the grass-blades before the dawn.

Flowers and their attendant insects are most active in the evening twilight, and birds in the dawn. As dusk falls, many of the most fragrant blossoms pour forth their strongest scent ; and the woods and stream-sides are drenched with sweetness until the air grows chill for daybreak. The sharp scent of mint blows coolly from the edges of the stream, mingling with the heavy perfume of the meadow-sweet. The lanes are full of the coarser fragrance of the elder-blossom, blended with the sweet breath of dewy hay. Honeysuckle sheds its peculiar sweetness from the copses where it twines round the hazel-stems, and from the hedgerows hot in the day's sun ; its tide of scent grows fuller as July advances, and elder-blossom declines. Sweetest and most abundant of all the night-blown perfumes is that of the butterfly orchis, lurking in the shadow of some beechwood or tangled brake. Its scent, poured forth after dark, is astonishingly powerful for a plant which grows singly or in small

companies. Moths and other insects which help to fertilize these fragrant plants of night seem to be drawn by sight as well as by scent. If we search with a light along a garden border, we find them feeding on blossoms which to us are scentless as well as on those which drench the night. As long as the air keeps the warmth of evening, and the scent pours forth, the filmy wings vibrate about the blossoms; then, as the scent fails, and the air grows chilly, the moths withdraw, leaving the hungry bats still hunting impatiently in the dawn. Only the scent of the cut hayfields still blows through the morning air, as fragrant in the dewy coolness as in the dancing air of noon; and while the bats still flit about the elm-tops, the first bumble-bee wakes on the honeysuckle-blossom where it has bivouacked, and sets to work again before sunrise.

Before the hay is cut, the gold and silver wings of the ghost swift moths are thickly strewn each morning on the paths and roads through the hayfields, and show how rich a harvest the bats gather even in the short June nights. But by July this well-stocked hunting-ground begins to fail them, and they are forced to hunt on into daylight; just as in winter, when few insects fly at night, they work in the mild afternoons.

By the end of June the wonderful chorus of song which bursts out a little before sunrise in the height of the nesting season has dwindled to a few voices. Dawn comes less jubilant than solemn; but still the skylarks leap singing together into the grey air for the earliest song of all, before the Plough has

faded or their wings can be seen above the fields. When the dew grows visible upon the out-thrust hedge-sprays, sometimes the nightjar will renew a fitful murmur, like a ghost between the night and the day. As daylight widens, all the other birds still singing lift up their voices, with the song-thrush and the turtle-dove conspicuous in the shrunken band. Even the corn-bunting, resolutely hissing on the fallow, at last makes his own voice audible in this hymn to Day. It ceases as suddenly as it began; the birds disperse to feed, and flit about the bushes with the old confidence of Eden. Men are so rarely seen abroad in these early morning hours that the birds pay them little attention if they come. The highway at sunrise is their playground; the thrushes, still following their grown young, have lost their quick glances of timidity, robins flit about with a peculiar aspect of possession, and here and there a cock yellowhammer, still busy with courtship, runs in wide curves and sudden dashes about his hen. Some flowers still sleep in the cornfields, tightly folded until the sunlight warms them, or their own hour for opening is come. But others, like the wild roses and the purple mallows, do not close in darkness, but watch on, mysteriously vigilant in the first light; and these keep the sense of night's magic alive until the sun warns the birds to be fearful again, and the world grows busy.

RAILWAYS have helped to lessen the numbers of British birds and plants, by opening up remote districts to traffic and cultivation; but they also provide them with some of their safest refuges. The slopes of railway cuttings and embankments, and the strips of land which border the course of the line, present in very many cases exactly those natural features which birds find most to their liking, as well as a greater freedom from disturbance at nesting-time than can be found in most fields and hedgerows, and in many woods. Birds and animals soon learn that, for all their rattle and roar, the passing trains do not in the least interfere with their own life; while, as for the real dangers to themselves, their nests, and nestlings from farm-stock, dogs, and boys, the waste and fenced-off margins of the railway form a sanctuary where the monstrous bodies and blundering hooves of horses and cattle do not threaten them, and upon which the bird's-nesting village boy is, as a rule, shy of trespassing.

There are many different features of a line of railway through ordinary undulating country which make it attractive to the birds. Steep cuttings, on the whole, do not offer many advantages to bird life; they are apt to be damp, cold, and bare

of surface, and afford little of the sheltering cover which most of the smaller birds love. But even the naked and perpendicular side of a cutting is often seized upon as a nesting-site by a colony of sand-martins, if a layer of soft and workable sand chances to be exposed. The difficulty of finding suitable nesting-quarters is the greatest problem of the sand-martins' summer life; they are often prevented from settling in neighbourhoods which fully satisfy their other chief need of an abundant supply of winged insect food, because of the absence of any suitable sandy face in which they can drive their narrow nesting-tunnels. In places where there are neither sandpits, dry, natural scarps, nor steep and sandy river banks, the railway often comes to the sand-martins' rescue by laying bare some suitable stratum in the soil. There is something almost touching in the eagerness with which the little, mouse-grey swallows will seize upon some narrow layer of sand which may chance to be exposed at the summit of a cutting in solid rock, and fill this scanty habitable fringe with their crowded orifices and all the play and flicker of their active life. Yet there is no other bird which habitually haunts the deeper and steeper cuttings, except a few pied wagtails; and even the broader and gentler grass-clothed slopes which slant upward from the metals in soft soils are still too much subject to damp and cold to be regularly frequented by the birds which haunt the line.

Stretches of embankment, on the other hand, are often as perfectly adapted to the needs of the smaller

birds as if they had been constructed with their special interests in view. Warm, well-drained slopes, covered with tussocky grass and many kinds of flowery herbage, supply exactly the kind of nesting-site which is loved by the ground-building species. The hedge which bounds the railway's territory and the patches of brambles, undergrowth, and young sapling bushes which stud the sides of the embankment, form equally welcome haunts for many kinds of thrushes, warblers, finches, and other birds which nest among low green boughs. The advantages of the spot are complete, if, as often happens, there is a moist ditch or a shallow and gentle rivulet trenched at the foot of the embankment, under shadow of the sheltering hedge. Such a thread of water will add a deeper luxuriance to all the green and tangled cover of summertime upon the slopes, and will foster that abundance of insect life which it is absolutely necessary for many small birds to have within easy reach at the time when they bring up their young.

Skylarks are particularly fond of nesting on the upper slopes of a grassy and flower-grown embankment that faces the south or west. The sitting bird will show absolute unconcern at the trains which rush by within a few feet of her sheltering tussock ; and the newly fledged young can be found in numbers in June, scrambling and squatting on the hot ballast by the very side of the metals, with tails still scarcely half-grown, and their long hind claw as conspicuous by contrast as the ungainly limbs of a young foal. Skylarks' nests are common

to both the embankment and the surrounding fields, though the shelter and dryness of the embankment make it one of the most attractive of all sites. But it is often very striking how in a smooth, sleek land of even pastures the waste vegetation of the railway bank will attract certain birds, such as meadow-pipits and whinchats, which require just that rough and scrubby touch in the vegetation which is not to be found in the fields. The whinchat loves the harsh, tussocky grass of broken ground, interspersed with a smaller proportion of gorse, brambles, and brushwood than is appreciated by the true birds of the thicket, and over-topped with the tall stems of fennel, cow-parsley, dock, and similar plants which are waste and unprofitable to the husbandmen, but are esteemed by the whinchat as convenient perches or watch-towers. In a country which is otherwise inhospitable, whinchats will discover and seize upon the rough slopes of some sunburnt railway embankment just as the sand-martins in the cuttings are attracted by the narrow belt of sand. Often we may walk for miles through the meadows and woodlands of a southern English county, without meeting a single pair of whinchats, or finding a rood of land which suits their habits, and then at last we discover them settled on the strips of artificial waste which the railway engineer and the "navvy" have unconsciously framed to their needs. Studied care often fails to produce in an aviary such a happy disposal of vegetation, soil, and water as occurs without design by the sides of the levelled

track ; and the multiplication of railways through the length and breadth of the land has widened travel and encouraged the formation of new communities among birds as well as men.

The traveller by train has, as a rule, little suspicion of the unusual wealth of bird-life which is concentrated upon the railway line at many points of his journey. The familiar onrush of the engine creates no betraying panic ; and not one bird in four is to be seen by the swiftly passing eye. But none the less there are certain birds which are so often seen posted on the telegraph wires or the hedges by the side of the line that they form a special group of railway acquaintances, and can be looked for with confidence year by year in their haunts. The species vary to a considerable extent in different types of country ; but each of them is constantly visible within its own limits, though little may be seen of many other of the birds which are nesting simultaneously on the same overgrown slopes. The yellowhammer is one of the commonest birds which thus stand sentinel over the railway ; its nest is found on the whole face of the embankment, both on the drier upper slopes where the larks and whinchats breed, and among the ranker swards of luxuriant vegetation by the ditch or stream. The tree and meadow-pipits are often to be seen by the line, and both are glad to nest on the embankment in the shelter of rough herbage and brushwood. When the whinchat has settled on the same waste slopes, his buff breast and dark, conspicuous cheek-stripe frequently catch the

eye as he mounts guard on the wires over his nest, which is concealed with extreme skill in the grass tussocks or dwarf furze-beds on the bank. The sharp "chat-chat" of his alarm note will often float momentarily in at the open window; for he and his near kindred are among the most openly anxious of birds when they think their nest or young are threatened, and his bosom is moved to some alarm even by the well-known train in steady movement. If the train is stopped by an adverse signal on some sunny stretch of embankment where several pairs of whinchats are nesting, the alarm and annoyance of the handsome and distinctive little birds make a picture of such charm and interest that the interruption to the journey becomes a positive pleasure. On the familiar run between London and Reading by the Great Western line, there are two birds which can generally be seen or heard in summer by passengers in the swiftest express. These are the butcher-bird and the corn-bunting. The butcher-bird, or red-backed shrike as he is formally known in English, haunts the stout, thorn hedges that border the line; the cock bird takes up a bold, hawk-like attitude on a telegraph-wire, a fence-rail, or a jutting spray of the hedge, and can be recognized even as the train passes by his conspicuous pose and dark eye-stripe. The corn-bunting is still commoner among the arable fields along this portion of the line. Dullest and most dejected-looking of all the birds of the field, he sits spiritlessly on the same conspicuous perches, and tirelessly scrapes out the

harsh, stammering call which can be heard time after time through the noises proper to the train as it sweeps over the level country between Slough and Reading. When the smell of the beanflower and the sound of the corn-bunting's "scrannel straw" blow in together, the railway carriage is filled full of the spirit of midsummer.

The deepest and most secluded refuge of all those which the railways have provided for the birds is formed by the old abandoned ballast-pits which were dug to provide material at the time of the construction of the lines. They fringe the railway here and there in various parts of the country where more soil was required for raising embankments than could be supplied from the excavated cuttings; and they have remained for the greater part of a century as deep and stagnant pools, half choked with peaty vegetation, and overgrown with a wealth of reeds, giant water-plants, and sheltering scrub. In these ancient and undisturbed pools bird-life runs riot through all the breeding season. Early in April, long before the tardy water-vegetation begins to shoot green among its russet swaths, the coot and water-hen pile together their dry reed nests, identical except for size; and by the time that the cuckoo is calling from the tasselled willows and the sedge-warblers from overseas are chattering once more in all the covert places of the pool, the wary mothers are convoying their troops of newly hatched fluff-balls among the still lagoons. Towards the end of May the water-plants begin to transform the rusty and down-beaten reed-beds with suddenly

accelerated growth ; and by midsummer the ancient pools have become a fastness of almost tropical vegetation, where the enormous leaves of the water-dock and deep groves of bulrushes and sceptred irises conceal a wealth of multiplying bird-life on every side. White-collared reed-buntings cling chirping to the swaying osiers above their nests in the undergrowth on dry land ; the inconsequent song of the sedge-warblers bubbles from every belt of green, and the silvery chatter of the reed-warblers flows unceasingly from the high beds of cane-like reeds, to which they sling their silky nests in the green twilight over the water. Cuckoos regularly frequent these pools, making the reed-warblers their special victims ; and all through the summer, from April to August, in pools where there is any flow, dab-chicks are busy hatching long, chalky eggs in their water-logged nests of weed. The taller bushes round the margin of the pools are as full of the nesting-life of thrushes, finches, and doves as the quaking reed-beds of the notes of water-birds and warblers. In no other inland spot can there be found such a concentration of bird-life at the breeding season as in such tracts of luxuriant fen ; and the very isolation and smallness of these railway pools make them even more thickly populous than the wide expanses of similar vegetation in the Norfolk Broad country, which in character they closely recall.

Wild flowers may seem to have but little place among the familiar associations of a railway

journey ; yet they find, even more than birds, a favourite home on the fringes of the permanent way. All the common English flowers, and many of the rare ones, can be seen from the windows of a train in the course of a year's travel in different parts of the country ; and the profusion of these blossoms of the railway is as remarkable as their variety. Wild flowers and weeds form, after all, but a single class of plants, and the slopes of the railway line provide in most cultivated districts one of the few strips of ground which are never tilled or weeded, or in any way subjected to those rigorous principles of cultivation which root out the tares from the corn, and make even a green hayfield a very different thing from a wild marsh meadow. But the railway does not merely provide the wild flowers with an asylum ; it specially consults their needs. Over the whole extent of British soil there is no situation in which a display of mingled blossoms will flourish more gaily than on a sloping bank or cliff-side that catches the southern or south-western sun. Thousands of miles of such sloping terraces are provided by the cuttings and embankments of the railway lines of our hilly isle ; and a large proportion of these slopes have exactly the exposure which plants best love.

The traveller who leaves London by the North-Western line has on his right hand, for the first forty miles or so, a continual succession of green banks that rise above his head and face in a south-westerly direction. For nearly the whole of those

forty miles the profusion and diversity of wild blossoms is in summer a feast to the eye. As the slopes of cuttings receive the drainage from the land above, they are often too chill and damp for most flowers' perfect well-being, and are therefore not so brightly carpeted as the sides of an embankment. Where, however, there is a fourfold set of rails, there is ample space for the sunlight to sweep the cutting-side, and, by adding warmth to moisture on its slopes, to nurse into prosperity some of the richest of all wild railway gardens. A sweep of flowers in a cutting is also more on a level with the eye. The minority of British plants which prefer the damper and cooler phases of our climate have also their special requirements provided from time to time along the course of the line. Brooklime and meadowsweet can plunge their roots in the moisture of the little ditch that often runs at the foot of the embankment, under the trim bordering hedge; and in the level Eastern counties, where cuttings and embankments are seldom needed, and wild railway gardens therefore not at their best, the long, flanking dykes give harbourage to yellow kingcup and mauve water-violet in April, and later to green reed and shining sedge. Where the cutting is scarped in the cleaner and firmer rocks, ferns choose their foothold on the ledges with all the delicacy of the plants in a nurtured rock-garden, and with more than their charm of wildness. Even among the sliding shales of Devon the tufted heather twists its roots between the knife-like rock-edges, and props a little heap of trickling stones. The

fringes of the line have all the contrast and variety of each type of surrounding country, and are bedecked with a special concentration of the flowers which are native to each soil.

The colt's-foot is the first blossom of the year to brighten the borders of the railway; and there is none which clings so closely to the very centre of the track. Very early in the year the scaly stems and single flower-buds of the still leafless plants may be seen thrusting to the light from the dense clay of the embankment, or even from the compacted bed of ballast between the metals themselves. Very little later the catkins of the sallow, or palm-willow, make a bright patch of colour in many places along the line. The sallow is more tolerant of drought than most of the other willows, though the common crack-willow is by no means such an inveterately thirsty plant as might be supposed from its general situation by the side of dykes and streams. The sallow will flourish on clay banks almost as inhospitable in aspect as those which the colt's-foot chooses as a home; and on the sides of many embankments in the hills of the Sussex weald it is easy to compare from the windows of the train the bright golden globes of the male sallow blossoms with the leaner greenish female catkins which are borne on a separate bush, often growing close by. These dull-looking female flowers are overlooked by the children who gather the boughs of palm for Eastertide, and may be mistaken for overblown specimens of the brighter and more familiar blossom. But in May,

when the sober foliage of the willow has clothed its boughs, and the clustered flower-stems of the colt's-foot have been replaced by its large, cob-webbed leaves, the female catkins are bearded with white, silky down, which forms clouds about the branches and drifts like gossamer upon the wind. This willow-down is a favourite material with the birds which build some of the softest and most delicate of nests, such as the goldfinch and lesser redpoll.

By the time that the silver willow-buds expand into full-blown gold, the sides of the cuttings and embankments in many parts of the country begin to be spangled with a varied carpet of primroses, anemones, dog-violets, cuckoo-flowers, and lesser celandines. This mingled display of blossoms, which is so deeply characteristic of the April hedgerows and copses, is generally to be found in places where the railway runs through tracts of flower-decked woodland, from which the blossoms overflow to the line. There are many spots in Surrey and Hertfordshire, as well as in counties further afield from London, in which spring seems to welcome the traveller before he has yet alighted from the train. Where the ground through which the railway passes is a stronghold of April flowers, the banks of the railway are colonized from the neighbouring wood; but they often offer foothold to primroses and anemones at points where they do not grow in the fields on either side.

The transition from spring to summer is marked in the flowers of the line by the blossoming of the broom, which on many of the lighter soils flaunts

such splendid plumes of yellow by the side of the passing train. The gorse is at its height a little before the broom; but the gorse, for all its spiny hardihood of appearance, is a delicate plant, and rarely seems to flourish on the composite and artificial soils of the railway embankment, or in reach of the engine's trail of steam, with the same luxuriance which it shows in its virgin haunts. Yet both the large spring-blooming species of gorse and the smaller kind, which flowers in late summer and early autumn, do much from their very profusion and mass to brighten the iron path. For glimpses of sheeted bluebells the traveller must look, as a rule, not on the actual margins of the line, but on the slopes a little beyond. These shade-loving flowers like a denser growth of protecting foliage than is compatible with railroad maintenance.

As midsummer draws near, the grassy slopes of the railway become covered with a beautiful combination of the tall flowers of the hayfield and the rich though lowlier growths which cling to the short turf of the cliff, to the open down, or to herb-scented clearings in the woodlands. The commoner flowers, growing in sheets and bands, form striking contrasts of colour, which impress themselves all the more vividly on the eye in proportion to the speed of the train's passage, and the consequent substitution of broad effects for detail. One of the commonest of these contrasts is formed by the tall, white moon-daisies, growing in company with red clover on the slopes of thicker

grass. Unlike the closely variegated pattern of the spring primroses and anemones, these moon daisies and clover blossoms of midsummer grow, for the most part, in broad sheets and stains of their own colour. Besides the green of the grass itself, shot here and there with the buff or purple bloom of the ripe seed, another element of contrast is continually present in the yellow of hawkweed or birdsfoot trefoil, or some other midsummer representative of this most common hue. There are also many shades of contrast among the yellows themselves. The birdsfoot shines with a sanguine orange, several shades deeper than the gold of the gorse; individual blossoms are often streaked and splashed with crimson, and even as they are seen from the train this adds a fervour to their glow. Broom-flower and the innumerable hawkweed blossoms have a clear, fulgent yellow. The abundant heads of the small trailing hop clover are not only paler and softer, but have a cool opaqueness of tone which is no less striking as a contrast to the glowing depths in the massed blossom of birdsfoot or of broom. The same cool yellow is seen in the much larger blossoms of the lady's fingers, which is very abundant in June on some of the railway banks in the chalk country in Buckinghamshire. Red clover blossom, on the other hand, is extremely transparent in tone; it is the softest and most luminous of all the red blossoms of the midsummer grass. Pink campion grows richly on many banks; and by the moist flanks of woods, or in the cooler uplands of the north, we may see the torn petals of the

ragged robin gleaming with the same shade of pink among the green grass, spiked with little rushes. There is one long tract of this kind where the South-Western line from Portsmouth climbs the ascent under the flank of the Hindhead Hills, between Liss and Godalming; and there, too, about midsummer, the mossy banks are lit with the mauve and white of dappled orchises. On many chalky banks sainfoin and lucerne clover stray down from the sheepfolds above, and add new shades of pink and purple to the colours of the native flowers. Most gorgeous of all the displays of red or purple blossom which flank the line, except, perhaps, for the sweeps of July and August heather, are the beds of tall rose bay which fill the pine woods by the side of the South-Western line near Woking. This beautiful willow-herb grows three or four feet high, and forms an expanse of colour as level and unbroken as the bluebells in a May beechwood. One of the most delicate contrasts of colour in the wild railway garden is formed where the deep pink of the campion mingles with the slumbering crimson of the straggling sorrel heads. An individual head of sorrel seems a thing of little beauty; but it attracts in mass, both now in early summer, when its hues of rust and blood gleam amid the rich green of the hayfields, and also on waste ground in autumn, when the sere seed-heads of a smaller species keep alive their smouldering glow among the bleached and withered grass.

The richness of the railway flora naturally depends on the soil of the surrounding country and the

character of the vegetation which it fosters. On a long railway journey across England many changes may be noticed, both in the profusion of the display beside the line and in the species of which it is composed. As we leave the chalk of the Chiltern Hills for the clays of the Midland pastures, there is a remarkable decrease both in the number and the variety of the blossoms to be seen from the windows of the train. On the main North-Western line the wealth of the Chiltern flora is equalled no more till the Midland clays and the Lancashire factory chimneys are successively left behind, and the train enters the scarred hills of grey mountain limestone that gaze across the sands of Morecambe Bay. Then the wild gardens become rich again, but rich with flowers that have not yet been seen on this journey. In June on the Windermere branch the pink bistort, or snake-weed, stands massed on the cool banks with its erected spikes; the beautiful meadow geranium shines blue among the grass, as it does, far to southward, in the meadows by the line through the Kennet Valley; and beside the rills that fall from the edge of the cutting shines the golden globe-flower, noblest of our native buttercups. It is a flora of moisture and of the north. But in many places the railway does much to induce plants to colonize neighbourhoods which are strange to them, both by the transference of soil from cuttings to distant embankments during the construction of the line, and also by providing a continuous and unbroken seedbed along which the plant can steadily push

itself forward. The lady's fingers, for example, which is abundant on the cuttings in the Chilterns, is a very local plant, and is seldom seen except on dry calcareous soils, or on cliffs by the sea. Yet on one of the lines which traverse the Chiltern range it has gained much ground in both directions, and is now seen, both to eastward and to westward of the hills, in two separate districts where it is quite foreign to the general flora. The soil of the railway line also offers a natural centre for the propagation of the seeds of foreign plants which are imported from many different parts of the world in cargoes of corn. Grains of corn are spilt from time to time upon the line, and the seeds of cornfield weeds among them. Then, for such plants as are able to perpetuate themselves in these surroundings, the line forms a convenient channel for their distribution across the length and breadth of the land.

In later summer, when the glory of the hayfields has fallen, and the copses are rank with flowerless growth, the railway banks suffer less than the woods and pastures in the general decline of summer blossom. That decline is least felt in cornfield borders and on waste scrubby uplands; and the varied fringe of the railway offers conditions which are not unlike those of the margin of cultivated ground, as well as of rough hill pasture. Amid the grass, grown harsh and dark, tough knapweeds and tattered thistles open their kindred blooms. Their purple is much deeper than the hues of the midsummer campion and willow-herb; it is in

harmony with the heavier tones of August verdure. Wild golden-rod lights up the ledges of the rocky cuttings; and on turfy shelves and nooks the harebell shows that the heavier months of summer can nurse a flower as delicate as any bloom of spring. In the September sunshine the pale mauve of the autumn scabious answers to hazier skies. Yet, for sheer profusion of beauty, midsummer is the supreme moment of the year among the wild gardens of the railway, as it is in the hedgerows and fields. Unharvested and unregarded, the June grass clothing the embankment survives the day of the hay-carrying that brings so great a change to the face of the land around. As we look across the landscape on the evening when the fields beneath the railway first lie empty, only the slope of the embankment seems the same. Where a week ago the moon-daisies shone white over many acres, the fields are now dark, yet fallow, in the twilight deepening to night. The lit train thunders down the grade, drawing a red-bellied coil of steam above it; but the white moths hovering above the grass are undisturbed by gleam or roar in their quest of the last blossoms of midsummer, respited upon the confines of the line.

SYSTEMATIZED knowledge can hardly be accumulated without books. The rustic, who deals little with books, has still much the same confused and partial views of natural history which his fathers held. It is curious how few species of birds and even of animals are known to most of the labouring men who pass their lives among them. The rustic generally knows the difference between swallows and house-martins, which many more instructed people do not; and to him the sight of the first swallow and the cry of the first cuckoo are welcome landmarks in the year. The robin and the wren, too, he knows well, and often regards them with a touch of affection dating from the days when they were "God's cock and hen." He also distinguishes the two kinds of thrushes, and knows all the common finches, two or three of the titmice, the hedge-sparrow, the starling, and a few more of the common garden birds. Nor does he lack clear views about the house-sparrow. But he knows nothing of the tree-sparrow, which is often overlooked and mistaken for its wickeder brother by persons who know that it exists; and his views on smaller summer migrants which naturalists roughly group as "warblers," and the French call *fauvettes*, are confused and partial.

He knows these little birds as ranges of snow mountains were known until recent years. Here and there a conspicuous crest was familiar, and was distinguished by a name, among a crowd of nameless neighbours; but even the named peaks had sometimes two different names, as seen from different points, and were taken to be two distinct summits. Some mountains, again, have had a name but no real existence; and it is much the same with the gardener's and farm labourer's knowledge of birds. Usually he confuses several species under one name. The marked contrast in the plumage of the male and female birds, or of either with that of the young, was a longstanding and easily comprehensible source of confusion to men with a good practical knowledge of their habits. East-coast wild fowlers, for example, knew the golden-eye drake as the rattlewings, and the duck and immature young as the morillon. The male hen-harrier, in like manner, was the dove hawk, and the hen bird the ringtail. But two species have sometimes been made out of one. In many parts of the country there are believed to be two distinct kinds of magpies; the tree magpie is distinguished from the bush magpie by the greater length of its tail, as well as by its choice of trees for a nesting place. Magpies will build their great roofed nest at almost any height above the ground, according to the cover available, either in a dwarf thorn-bush on the wind-beaten Cornish moors or at the top of a tall beech or elm in woods or pastures. There seems no evidence of any difference of size

among them sufficiently fixed to warrant their separation into two varieties or races, though the contrary has been maintained by some naturalists ; and there is even less ground for the belief that their difference in size has any connexion with their nesting place. In some parts of the western counties, again, the countryfolk believe in the existence of a third species of nesting thrush, besides the missel-thrush and song-thrush. This is described as being smaller than the song-thrush, and is called the rene-thrush, from its supposed habit of haunting the sides of the slowly flowing renes or "rhines" which intersect the marshes and meadows of the lower Severn Valley. The rene-thrush is held to be a kind of song-thrush, but an even sweeter singer. When the cottage boys wish to take a young thrush for the cage, they hunt among the thorns and willows beside the water-courses till they are satisfied they have found a rene-thrush's nest. They then tether the legs of the young birds with strings to the nest or the twigs supporting it, so that they may not fly before they are old enough to be reared easily by hand. In some parts, too, the name of "cane," often applied to the weasel, is restricted to an imaginary species supposed to be smaller than the true weasel, as the rene-thrush is smaller than the song-thrush.

The countryman's imperfect knowledge of natural history is shown more clearly by the comparatively small number of names which do duty for the animals and birds that haunt his own paths and

woods. He knows the "sleep-mouse" or dormouse, found with its feathery tail wrapped about it in its nest of grass among the autumn bushes; and he now and then meets the nests of the harvest-mouse as he reaps some wind-laid cornfield with the sickle. The frequency with which the common shrew is found dead on paths and other bare spaces obtruded it early upon his knowledge. The shrew long held an evil fame, under the name of the "over-runner," for striking sickness into cattle as they lay asleep, and took as prominent a place as the toad, or the wryneck in antiquity, among the medicines of white magic. But although he makes two weasels out of one, the rustic knows of no settled distinction between the wood-mouse and the two species of land-voles. All of them he calls simply field-mice, and regards their differences in shape of head and length of tail as being merely individual perversities of troublesome little creatures. His nomenclature is all the more confusing for its misapplying familiar names, or at least applying them differently. In certain parts of the west, chiffchaffs, wood-wrens, and willow-wrens are all called whitethroats. The whitethroat of the books is called the nettle-creeper; and this would be an excellent and distinctive name, if it were not also applied to the lesser whitethroat, the garden warbler, and often to the blackcap as well. The name of blackcap in country districts is more often given to the great, cole, and marsh tits than to the grove-haunting song-bird, which is shyer and escapes general notice; and in other places it is

often applied to the blackheaded gull, as white-throat is in parts of Scotland to the weasel.

Much as the pleasure of shooting tempts game-keepers to destroy most large wild birds in their covers, the incentive of money prizes in wrongly managed rat and sparrow clubs does much to pervert the countryman's attitude towards the smaller kinds. When these clubs include among the species for which blood-money is given thrushes, chaffinches, skylarks, and other birds of which the mischievousness is at least highly doubtful, they tempt the village boy to regard all small birds as fair game. Otherwise, the distinctions between the friends and foes of the gardener and farmer are better grasped than most other points in wild life. Observation has been sharpened by a practical interest which is absent in the consideration of such questions as whether eels grow out of horse-hairs dropped into farm ponds, or whether hares change sexes in alternate years.

Such fantastic beliefs have been dying a natural death for many years past, though probably old people are to be found in many parts of the country who still cherish them. But knowledge gains ground very slowly in cases when ignorance is allied with fear. So long as every reptile or insect suspected of powers of biting or stinging is treated to the flat of a spade, it is difficult for the object of suspicion to establish its innocence. The rustic has little of the adventurous scientific spirit which dares injury or infection on behalf of the advancement of knowledge. When he sees a grass-snake

or a blind-worm, he kills it for looking like an adder, and makes no experiments to discover whether the inference of its poisonousness is justified. Occasionally his prejudice makes him slightly ludicrous. There is perhaps some excuse for the consternation caused in a potato allotment by the discovery of a death's head hawk-moth. The terrific emblem on its thorax appears too expressly significant to be anything but a direct menace and warning; and when a large moth of diabolical appearance takes to squeaking, there is no knowing what it will do next. Yet there is no particularly sinister suggestion about most of the hawk-moths' caterpillars, except their large size and haughtily purposeful appearance; and when a privet-hawk caterpillar that has occasion to cross a gravel path sees the lord of the garden crouching, with spade uplifted to meet its spring, it must surely form a poor impression of humanity.

Here and there a shepherd or gamekeeper or labourer is found with a natural fondness for live creatures, and gifts of observation which have been well exercised by a lonely outdoor life. Such men have sometimes a wonderfully minute knowledge of certain aspects of wild life, and have seen some of its rarer and stranger incidents. But, devoid of educated training, the best of them are apt to slide unknowingly from accurate and valuable observation into accounts, not of what they saw, but of what they inferred or imagined. Good observation is closely dependent upon swift inference; but the discipline of knowledge is required

to guide inference aright and to criticize the impressions of sense. An uninstructed observer may see a starling shivering its feathers against the sunlight striking over a roof-ridge, and come in to report that he has seen a bird in the garden with feathers of bright gold. The eye of one who knows birds may receive just the same impression of golden splendour; but his mind will be so incredulous of the optic message that he will look again until he discovers the bird to be nothing but a starling. But the rustic is fortified by no such training in what is possible or probable; a bird with feathers golden and glittering is to him no more improbable than a squeaking moth with a skull and crossbones on its shoulders. Reasoning provides him with results of strange unreason; and the most unimaginative ploughman may bring home stories stranger than a fairy-tale.

WEEDS are no natural class of plants, but the outcome of man's strife with nature. If we could still live in harmony with nature—that is to say, like animals—there would be no such things as weeds. The thorns and thistles which vex us have their due places in the wild, and are beneficial to many of its creatures. They became weeds when man began to change the face of the earth in accordance with his own needs and desires. For nature is impartial to all her children ; she has none of man's preferences for myrtle and fig trees over briars and thorns. The same soil nurses both alike ; and when man chooses to introduce his distinctions, he has to work to make his wishes good.

Since weeds are simply plants growing where we do not want them, the same plant may or may not be a weed according to the place in which it appears. The Shirley poppy that springs in an asparagus bed is as much a weed as a cabbage in the rose-garden. Some plants with a double gift are equally well fitted to take their place in either the vegetable or the flower garden ; but if they have once made their reputations by serving tables, few English gardeners will tolerate them on the honourable side of the hedge. Abroad, indeed, not all

gardeners are so squeamish ; and there we often see the deep copper leaves of the beet-root taking the place in the flower garden to which their lustre entitles them, and the artichoke lifting the regal dignity of its glaucous foliage among beds of dahlias and roses. But in England these distinctions are more precise, and even crab-apple or cherry trees are seldom tolerated in respectable flower gardens unless they are warranted to produce fruit too abortive or too sour for human use. Such distinctions are undeniably intrenched behind a sound principle ; for the prime purpose of a flower garden is, after all, to minister to pleasure, not utility, and to nurture plants which the English climate does not scatter broadcast in our copses and hedgerows. In their reaction from formality, enthusiasts for wild gardening often tend to forget the difference between a garden and a wood. But it is a mistake to regard the distinctions of the flower garden as primary laws of nature, or to forget that our classification of certain plants as weeds depends entirely upon the purpose which we have in view. The worst of our weeds are merely plants which happen to profit by the same conditions of growth and methods of dispersion and propagation which suit our cultivated crops.

The distinction between a crop and its weeds is emphasized more strongly on arable land and in gardens than in pastures and hayfields. Many wild plants often occur among the orthodox constituents of a grass field, and only a small proportion of them can be called mischievous weeds. But in

a cornfield every plant is a weed except the corn; and since cornfields are more exposed than gardens to all the wild influences of the surrounding country, their tale of weeds is a large one, and includes many flowers which are favourites with every one except the farmer. The most distinguished cornfield weed is, perhaps, the poppy, which is unique among our native flowers for its bright scarlet colour, and is only too fond of cornfields on sandy or chalky soils. Yet poppies are hardly so mischievous as their profusion in many places would suggest; for although they often fill a cornfield so full of blossom that at a little distance it appears one sheet of red, they have no great power of strangling or overshadowing the corn. The first place in the roll of evil is occupied by that ignoble pest the couch-grass, which brightens the landscape with no flower worth mention, and in arable or garden ground is seldom seen above the surface, but chokes and exhausts the soil with its network of creeping root-stocks. Another brilliant cornfield weed is the blue cornflower, or bluebottle, which is locally abundant in certain districts. But it is almost unknown in England on richer or damper land, and is rare enough in most parts of the country to have gained the right of inclusion in flower gardens. It provides one of their most beautiful pictures, when the goldfinches hang on the nodding stems to pick the ripening seeds, flashing their barred wings and crimson caps against the bright blue blossoms.

Charlock, or wild mustard, which is almost as

great a pest as couch-grass, at least atones to a certain extent by the sheets of pure yellow which it spreads across the midsummer landscape—hardly less pleasing than the poppies' fiercer red. Both plants are particularly aggressive on the light soils of the open fields on the chalk downs, where the vast ranges of the landscape allow their brilliant squares and stripes to be conspicuous at a great distance. On a drizzling and misty day of June the yellow charlock blossom, smouldering through the vapours that cloud the hill, is often even more striking than on fine, sunny days, when its contrast with the rest of nature is less acute. The length of time during which most plant-seeds can lie dormant is still uncertain; and the stories of seeds found in Egyptian or Roman tombs having germinated after thousands of years seem always to have proved false when accurately investigated. But many seeds will lie dormant in the soil for a long term of years, when the conditions of culture are changed from tillage to pasture or from pasture to woodland; and both the poppy and the charlock have given such proofs of vitality.

No display of blossom in England is brighter to the eye than a cornfield, either blazing with the pure colour of massed poppy or charlock heads, or dappled with their mingled scarlet and yellow, and with blue cornflowers, pink corn-cockles, and tall white campion. Such a field can now and then be met with in early summer on light soils, and is a delight to everyone but its owner. Many other plants which chiefly occur as cornfield weeds are

of lowlier and more delicate growth; and the lesser weeds of a cornfield on a chalky or sandy soil include many shy and curious species, like the little purple-flowered fumitory, the wild heartsease, in all its many varieties of colour, and the finely cut shepherd's-needle, or Venus's comb. Even the well-known pink convolvulus is a retiring plant as it twines among the shaded stems, in spite of the mischief which it can do in the long run by strangling the crop.

But some weeds, both of cornfields and pastures, are weeds in the fullest sense of condemnation which the word implies. They are not merely mischievous to culture, but rank and displeasing to the eye. Before the first cornfield was sown, doubtless nature had a place for the plant alternatively known, in this or other lands, as goose-foot, pigweed, or fat-hen; but it was certainly no pleasant nook. This plant is a near ally of the meaner sorts of dock; and it often consorts very closely with the black bindweed, or buckwheat, which strangles many goodly fruits and blossoms for the benefit of as worthless a tangle of vegetation as even the corner of a brickfield or a suburban rubbish-tip can show. The flagrant offensiveness of this group of plants seems to shock even the moral sense of the sparrow. During the rare intervals when its conscience awakens, the sparrow may be seen furtively turning to good works and eating the bitter herb of repentance in the shape of the seeds of knot-grass and fat-hen.

Most weeds affect the crop among which they

grow by competing with it for space, and robbing it of sunlight and air, and of the food and moisture in the soil. But the curious class of parasites, of which several species work considerable mischief to English agriculture, make a more direct attack upon the plant by draining it of its own vital juices. The most familiar example of a parasite is the mistletoe. This ranks as a pest in many old orchards, though it has an independent market value which makes it worth the while of the provident French farmer to export it in large quantities to this country at Christmastide. Less known to the world at large, though of greater importance to the farmer, are the various species of broomrape and dodder. The dodder's thread-like stems and small pink or white clusters of blossom are most familiar as a parasite upon furze-bushes, in which situation they are no special concern either of the farmer or the gardener. But one species will attack the China aster, while the vegetable garden may also be infested. The lesser dodder, of which the stems attach themselves to furze, thyme, and heather, is believed to be a separate species from the parasite upon clover, which is often a troublesome pest, and is chiefly propagated by sowing impure clover seed from abroad. Unlike the mistletoe, which is sown upon the boughs of trees by birds, the dodder must find its seed-bed in the soil, and to this slight extent it is a non-parasitic plant. But as soon as the growing stem can attach itself to a victim it breaks its link with earth, and henceforth subsists wholly as a parasite.

Much the same procedure is followed by the various species of broom-rape. Of the two species fairly common in this country, one is parasitic upon broom and gorse, and the other, like the dodder, upon clover. Their pale, fleshy stems and flowers are often seen in early summer in clover fields, and attract attention (like those similar parasites, the toothworts and the bird's-nest orchid) from their lack of the wholesome tinge of green which is proper to vegetation. This sickly hue is a sign that these parasites do not extract food for themselves from the air, as even the mistletoe does, but feed on the juices of the plants to the roots of which they are attached. Besides these thoroughgoing parasites, which suggest unhealthy habits by their pasty complexions, there are several other plants which are apparently parasitic to the same extent as the mistletoe. Though they extract part of their nutriment from the air, and accordingly have normal green leaves, their roots are attached to those of various other plants of marshes and meadows, as those of the mistletoe are to the apple-bough. Among these secret parasites are the yellow rattle of hayfields, the red rattle of wet grass slopes, the gay little eyebright of hillsides and upland commons, and the cow-wheat of the May copses, with its small yellow blossoms mouthed like those of the snapdragon. Of all these, the only really mischievous weed, from the farmer's point of view, is the yellow rattle, which seems most often to come to the fore in English hayfields after a droughty May, when the poorness

of the haycrop gives it a chance to master the fields.

The difficulty of determining the precise capacity for mischief of many weeds is increased when they or their berries are poisonous. Only experience can determine how many white bryony berries or laburnum seeds it will take to kill a child, or how much meadow saffron or woody nightshade a cow ; and there are grave objections to collecting a large body of evidence. In many cases the only safe plan is to refuse to give a plant the benefit of the doubt, and either to eradicate it, if that can be done, or to keep young children or farm-stock away from it at the season when it is tempting.

THE blooming of the heather in August brings a new spring to the hills and moors when summer in the lowlands is growing heavy. Whether it lies high or low, on Perthshire mountains or Hampshire commons, a heather landscape shares comparatively little in the general awakening of vegetation in the early year. It is true that young birch leaves in April or early May are full of the lightness of spring; and the exotic larch, which has now become so familiar in many moorland landscapes, has an even tenderer green. But straggling bushes of holly, alder, and mountain ash do little to tinge the heath and moor with vernal freshness; while the woods of Scotch fir are as late in awakening to springtime as the heather. When lanes and deciduous copses are gay with primroses and bluebells, and the dandelion flames in green meadows, landscapes of heath and pine show little more life and colour than under the rainy skies of December. But when the copses are tarnished by the suns of later summer, and the flowers of the hay-crop have long fallen, the moors and heaths break out into a concentrated splendour of vegetation which combines the luxuriance of summer with the freshness of spring. None of the great sheets of blossom which mark the midsummer months have

so deep and profuse a dye as the purple heather ; and no other group of blossoms covers such immense landscapes in a single stretch. Yet in spite of the almost tropical intensity of a hillside of purple bell-heather under a noonday sun, there is a freshness and vigour in every detail and association of its growth. The air comes blowing over heath or mountains with a freedom and exhilaration which is lost in enclosed landscapes ; and from the sky-blue dragon-flies that flit about the heather-tufts to the strong, green shoots that tip every bough of the pines the moorland landscape abounds with the sense of life.

Besides the three or four rarer species which are confined to Cornwall and Ireland, there are three well-known species of heath or heather which are found together on most moors and heaths. The terms heath and heather are used almost interchangeably for all of them in popular speech. Most botanists confine the name of heath to the two bell-flowered species, the so-called fine-leaved heath, which is the typical heather with the deep purple blossom, and the cross-leaved heath, with its paler bells of rose. Heather with these authorities is the plant with the smaller, star-shaped blossom, which is often known as ling. White heather is not, as some suppose, a separate species, but a mere sport of any one of these three. The paler cross-leaved heath and ling seem to run to whiteness a good deal more easily than the deep purple bell-heather—to speak again in the normal idiom ; but it is not rare to find white bell-heather in a long

walk on the moor. In botany the generic name of the two heaths is *Erica*, while that of the ling is *Calluna*; and it is as well to keep this nomenclature in mind, since the Latin names frequently appear without further explanation in articles on the grouse and its ailments, which provide one of the prime interests of the moor.

It is the purple bell-heather which gives their characteristic body of colour to the August moors and heaths, while the cross-leaved heath and ling supply the softer contrasts. Ling is found in rough fields and on country commons in many places where the larks and plovers have never seen bell-heather; and it is by far the most important plant on grouse-moors, supplying the grouse with the greater part of their food during the year. But to the eye gladdened by the colour on the August moor the purple bell-heather seems the true blossom of the place and time, and overshadows its more modest kindred. Its colour far excels in depth and strength the many other mauve or purple blossoms, which begin with the large field scabious in the July meadows, and are so thoroughly characteristic of later summer. When the dye of the bell-heather begins to soak the hillsides in southern England, the streams are lined with purple willow-herb and loosestrife, and the brighter sheets of rose bay flare suddenly in the pinewood rides. The hemp agrimony soon lifts its mauve plumes among the willow-herb; and a little later the smaller sheep's-bit scabious spreads its colour in the September fields. All these flowers are of

some kindred shade of purple, mauve, or lilac ; but none of them can equal the purple heather for that vehement richness of colour which seems as if poured from the heated veins of the August earth. It is a colour which transfigures all weaker elements in the landscape, and can strike amazing chords. One such magnificent combination, seen often in the west and north, is where the lips of a moorland valley frame a wedge of yellow sand-hills and blue sea. But nowhere is the contrast of colour more triumphantly daring than about Hindhead and Blackdown and other sandy ranges of Southern England, where the purple slopes are scored and banded with a vehement ochre. Elsewhere the more permanent elements in the landscape show up the heather's splendour by a contrast of softer tones. Such is the effect of the pale-grey terraces of limestone that bear up long fields of heather in the Cumberland moors ; and even among the flagrant landscapes of the Hampshire and Surrey heaths, the pits that scar the purple hill-tops are here and there of white or silver sand.

The investigations of the Committee of Inquiry into Grouse Disease have shown that grouse depend upon the ling for food to a much greater extent than was suspected by many people well acquainted with them. In August ling was found to provide 60 per cent. of their food ; and from that time on the proportion of its shoots, blossoms, and seeds increases month by month. The diet of black game is a good deal more varied, as might be expected from their considerably wider distribution

and their preference for the broken fringes of the moor rather than for the ranges of heather. But it is clear that diet alone cannot govern the distribution of the red grouse, for it seems never to have been a native of the south, east, or west of England, either on moorlands of the usual mixed type or where only the ling grows.

In August the grouse and the occasional black-cock or greyhen are left almost alone as characteristic birds of the higher grouse-moors; and even on the low ground about their outskirts, or in waste tracts where the heather alternates with pools and wet mosses and stony loch-sides or river-banks, there is a great diminution of bird-life since the days of the nesting season three months ago. The curlew and golden plover have lost the loud calls and anxious activity of spring, and are beginning to leave their breeding grounds even before they are hastened by the opening of the shooting season. On the heaths of the south, when there is little strict game preservation, and no such concentration of interest on a single dominant species as on a grouse-moor, the quiescence of wild bird-life in August is equally pronounced. The yellow-hammer still repeats his ditty from the sprays of gorse, and here and there a linnet murmurs, as if half asleep, a snatch of his delicate song. But where the old and young plovers are gathered in small parties round the water-patches they are almost as silent now as the nightjar that flits up from the fern. Wrens work noiselessly through the heather of these southern hills like the larger

island race by the loch-sides of the treeless Hebrides. In the midst of a broad sweep of heather, out of earshot of the light voices in the gorse, the great expanse of purple blossom seems to dominate all nature, like the yellow sands of the desert. It subdues every voice less illimitable than the drone of the bees in its own bells and the murmur of the wind upon the heath.

Most of the life of a heather country at this time of year is concentrated about the moister bottoms, where the bell-heather and the ling break away into thinner and more varied growths. Where the soil begins to grow damper and slope to the bog, the cross-leaved heath emerges from its concealment in the hollows among the roots of the more vigorous species, and tinges the dry, white grass with its silvered foliage and pink bells. The harmless grass snake hunts among the water plants for frogs; and here and there the cast skin of an adder may be found intertwined in the heather roots on the lip of the hollow. Country people believe a snake's slough to be infallible for drawing a splinter or thorn out of a gathered finger; and, indeed, the smoothness and tenderness of the dry skin may make a better protection for the gathering while it heals itself than the softest glove. The curlew's feathers dropped about the bog's margin are signs of an earlier summer life, already almost gone; and the soft grey plume of a heron tells of a wanderer which may not come again. But all such tokens of the swift lapse of the seasons are lost in the abounding sense of August life. The

hum and stir of the bees seem to goad the butterflies of the heather to a supreme activity. Large fritillaries come dancing across the moor on tawny wings, and alight on a purple thistle bloom. Blue butterflies in twos and threes pass like petals in a whirlwind; and the handsome but destructive antler moth and other day-flying species vibrate about the heather-tops with an unmothlike joy in the sun.

These marshy slopes and hollows, with their vivid green carpet, are set with many of the most beautiful and curious moorland flowers. They are the chief haunt of those strange little carnivorous plants, the butterworts and the sundews. Two species of butterwort are common among the moors and mountains of the northern and western parts of the country, where their violet-like blossoms, above a rosette of pale, greasy-looking leaves, are conspicuous on most wet ground. When a small insect gets caught in the sticky secretion which coats the leaves, the plant slowly and steadily sets to work upon it in three separate ways. From one set of minute but innumerable glands it pours forth an increased amount of glue to hold it. From another it secretes a different acid liquid which dissolves and digests it. Meanwhile the upturned edges of the leaf slowly fold inward upon the prisoner, to diminish its chance of escape from the clinging glue. Such a system might well appear sufficient for the needs of all plants which capture animal prey. But we need look no further than the sundews to find a different and a more highly

developed device. They are rather less conspicuous plants than the butterwort, with a loose spike, three or four inches high, of small white blossoms, and pads of reddish hairy leaves, round in one species and oval in another. The red hairs are tipped with a drop of sticky fluid similar to that which coats the leaves of the butterwort. Insects are caught by it in the same way ; and the sundew, like the butterwort, then pours out more of the glue, and also a digestive fluid. But it improves upon the butterwort's methods. The sticky fluid itself becomes acid and dissolvent when it is excited into a freer flow ; and the rows of hairs begin to close in upon the victim in a few minutes after it is caught, and not after several hours, like the edges of the butterwort leaf.

Other less sinister plants are no less characteristic of the bogs and mires among the heather. Where the heat-dance begins to hover as the sun grows higher, the August wind bears out across the purple billows the bay-like fragrance of the bog-myrtle, or sweet-gale, covering the swamp with its shrubby growth. The scent of the bog-myrtle in the sunshine, like the fluttering white tufts of the cotton grass, is one of the deepest associations of free and solitary landscapes ; yet both plants have long survived in the trampled plains of Aldershot. There, too, grows the yellow bog asphodel, with its spike of stars, the little marsh pennywort of the moorland rivulets, and the bogbean, with its lace-like blossoms of pink. While some moorland flowers, like the white grass of Parnassus, appear

seldom, if ever, on the heaths or hills of the south, the bogbean is true to suitable localities from one end of the kingdom to the other. In early May it opens its flower-spike above the water of the sedgy lakelets that stud the shingle beds of Dungeness in the extreme south-east; and by August it comes into blossom in the far north-west, where the hills of Harris loom across the peat-hags of Uist.

THE sandy shores which are so common on many parts of the English coasts are characteristic of strong tidal seas. Only a sea with a range of at least twelve or fifteen feet at the neap-tides can maintain these wide margins of debatable ground, belonging alternately to the upper and the under worlds, and renewed twice in every twenty-four hours by the pristine forces of nature. Familiar with the almost tideless waters of the Mediterranean, Cæsar on his first inroad into Britain found nothing more noteworthy than the force of the Kentish tides ; and half of the drowsy fascination of Mediterranean waters for the northerners is due to their withdrawal from the stir of the Atlantic.

Sand will not lie banked at so steep an angle as shingle ; and this is another reason which adds to the spaciousness of many sandy shores when the tide is out, and the shore birds return to their cleaned and replenished feeding-grounds. Differences of current and wind produce curious variations in the composition and compactness of the beds newly strewn by each tide. But it almost always happens that a sandy shore borders a shallow sea, and is bared at low water to a long distance out from

shore. Wherever the coastwise currents can maintain a fairly steady and uninterrupted flow, they tend to sift out their burden of sand and rock, and to deposit it in even beds. The wonderful graduation of the pebbles along the twelve-mile embankment of the Chesil Beach is repeated on a smaller scale wherever there is a steady movement of water bearing shingle, grit, or sand. Beaches of mixed sand and shingle may be found here and there, appearing to disobey this rule; but in most cases they are merely beaches in transition, owing to some shift of wind, a periodic change in the tides, or an alteration in the coast-line or outer banks. If we watch the shore for a week or a fortnight, we shall see either the sand or the shingle entirely removed or buried, so that the beach reappears in the uniform simplicity of composition that gives so vivid an impression of the vast resources of the sea.

Sandy shores are less characteristic of the west of these islands than the east; but they are nowhere grander than when they line some Atlantic bay. Such western sands are the arena of the ocean billows, and a foreground for the wide sea sunsets. In storms the sands of the west are less impressive than the cliffs which so often defend them, or even than the shallow shores of the North Sea, where the turmoil is cramped and intenser. The rush of the whitened wall over the sands is eclipsed in grandeur by its explosion against the crags. It is the groundswell rolling rhythmically from the deep sea in still, bright weather that makes the strangest

and most beautiful display on a stretch of western sand. The giant waves move unruffled by any superficial wind, and burst at last upon a golden and drowsy shore-line. No gulls creak or scream at their threat of ruin, and the sky is bare of the wisps and masses of cloud that promise storm. Here is the power of tempest without its fear; the wrath that stirred this commotion of the waters burst, hours or days ago, on some distant zone of ocean, and is now a bygone tale.

We can bathe among the rollers where they first trip and founder on the sands, shooting through each wall of water as it pauses, and regaining our feet in time to meet the next. As the shallows sap its feet beneath it, the roller nods forward majestically from above; it bows in a glassy front, and tears the lines of foam upon its summit into a rainbowed mane. Its weight as it falls is half-stunning; and sooner or later one may follow its predecessor too quickly to give time for the new dive. It is easier and hardly less exhilarating to plunge among the surf after the crash. The broken water bubbles like champagne, and has a stinging freshness under the glow of the sun.

Belts of sand-dunes are common along the western coasts; but from the general absence of other high land they assume a characteristic importance round the shores of the North Sea. The North Sea has been eaten out of the land of Europe late in geological time, just as its extension or appendix, the Zuyder Zee, has been formed by subsidence and inundation yet more recently. South of

the Humber and the Skaw the North Sea has the characteristic aspect and scenery of a half-inland water, and little of the eternal fixity which marks the ocean deeps. Standing beneath the cliffs at Dunwich we can see the young woods and last harvest's cornfields sinking rib by rib to the beach, and skulls of an eighteenth-century churchyard washed out by the tides. Such a scene for a moment does even more violence to our sense of nature than of humanity; if the sea itself can be so meagre and shifting, the world seems undermined at its roots. Yet this erosion of the earthy Suffolk cliffs is simply a lingering, modern example of the kind of process, time after time resumed, which remoulded the face of England in its less stable days. Sand-hills are but little more permanent and final; and where they merge dubiously into shallow waters they produce a like impression as of some new architecture of an upstart Jove, less venerable than the old walls of Saturn.

Yet every well-marked type of landscape has its own strong features of attraction; and there is a rare individuality and fullness of human association in the sand-dunes and low shores of the narrow seas on each side of Dover Straits. Travellers returning from the south by train catch their first glimpse of a true northern landscape between Amiens and Boulogne, where the engine flies past the wide, grey estuary of the Canche, with its fleet of fishing boats tossing off the sandy bar. Between the level sea and a wide, inner plain, such as lies behind most North Sea coast-lines, the piled dunes take an aspect

which is rugged and almost mountainous. The dunes which protect the coast of North Holland, with their abrupt slopes and hanging crests, have a fantastic attraction of contrast as they loom across the level meadows and bulb gardens. They are notable hills, for their strictly modest height, with a boldness of outline which would disgrace no loftier range. In all weathers these sand-dunes have their own characteristic scenery ; but they never make a gayer or more inspiriting landscape than after a crossing from England on a fine night in summer, when the sun rises as we draw near the Dutch coast. Sunrise is a natural accompaniment of North Sea landscapes, as sunset is of those of the Atlantic. But as the light gathers on the golden heaps of the dunes, and pours between them down the slopes on the nearer side, over a sea still in shadow, we seem to be approaching the very land of the morning sun.

In grey weather the colour of sandhills sinks to a dull white or sullen dun. In the darkness of a storm almost all colour dies out of them, and they loom like denser clouds of the driving sea-fog and spray, accentuating the whiteness of the surf. When a strong, easterly wind at nightfall drives the turbid North Sea billows against the dunes on our own east coast, the attack and repulse of the sea is full of contrasts with the craggy shore of the west. The waves themselves are shorter and more chaotic ; and they pound among the pits in the sandhills with a muffled thunder unlike the crash of billows bursting on rock. The surf of the spent waves

vanishes in a huddle of whiteness, instead of spouting in cataracts from the unmoved walls. It is a scene more savage, if less grand; and the eye marvels anew at the inestimable protection afforded by these wind-blown bulwarks to the leagues of low land within.

No less secure a barrier than the highest and rockiest coast-line while they remain in order, sandhills can become as devouring as the sea. Some of the most destructive inroads of blown sand have occurred on our Atlantic coasts, where its onset has been irresistible under pressure of the strong west winds and the new material flung up by the oceans. The most famous of these inroads of the sand are on the north coast of Cornwall, where the old church of Perranzabuloe (St. Piran-in-Sabulo) was for centuries hidden in the dunes. This blown sand of North Cornwall, which is chiefly composed of crushed seashells, has swallowed up other churches and villages and large tracts of agricultural land; and there have been movements of the same devastating kind on the opposite coast of South Wales. Agriculture in Cornwall is now recompensing itself to some degree for what it has lost by using the highly calcareous shell-sand as a fertilizer. For checking the advance of moving dunes, as well as for fixing their sea-front to make a securer protection against the tides, nothing is of much avail but the fibrous roots of sand-loving vegetation, and especially of the marram-grass.

Sea sand below high-water mark has the same

uncertain qualities of utility and menace as above it. In many wide, sandy bays, especially on the deeply indented western coast-line, the broad sands at low water provide a serviceable highway from shore to shore. They are marked by definite crossings or passages originally followed by foot-passengers and strings of pack-horses, but available for wheeled traffic. Some of the most regular of these routes, but little used now, since the improvement of roads and the development of railways on the mainland, are those across the estuaries of the Duddon and Leven, and the broad Lancaster sands in the north-east of Morecambe Bay. From Hest Bank on the east to Kents Bank on the west is a crossing of about eight miles, as compared with sixteen by the railway, which skirts the shore, and much more by a network of circuitous by-roads. In fair weather such tracts of firm, plain sand made a pleasant highway; but the shores of all such tracts are as full of traditions of disaster as the neighbourhood of high snow mountains. Fog and an exceptionally strong and sudden tide are two great causes of disaster on the sands; and when the traveller strays, there are the quicksands.

The strip about high-water mark on a range of sand-dunes is full of the fascination of a curious and exceptional vegetation, and the flotsam and jetsam of the sea. On the western shores, lengths of rough bamboo and strips of brightly coloured matting lie entangled in sea-weed and gulls' feathers along the sinuous water-line; and along the Channel and North Sea coast we find now and then a split wooden

shoe or cubes of Friesland peat. All such wandering relics, as well as the more tragic fragments cast up from wrecks, are full of the colour of contrasts as they lie beneath the winding convolvulus on English sand. Many of the plants and flowers that nod over them are themselves of forms and colours that seem half exotic among normal English vegetation. The sea-poppy clings with its hoary foliage and bright yellow blossoms to the flank of the sand, and in later summer stretches the long horn-like seed-pods over its tarnished stems. Spiny sea-hollies are dotted about the slopes, with their dense bluish growth and heads of light purple blossom. When they die down in winter, the shifting sand will tear them from their hold, and the withered plant goes rolling in the wind along the waste. Besides the small pink or white convolvulus, common in inland cornfields, the larger pink sea convolvulus is looped about the sandhills among the wiry grasses. The common white convolvulus that climbs about most inland copses and hedgerows has a way of producing pink blossoms when it grows by the sea; but its blossoms are larger than those of the sea convolvulus, and it will not root itself in the bare dune like the true plants of the sand. For years this lean and hoary vegetation may wind a web of rooty fibres more and more thickly over the face of the sandhill, until it seems likely to become firm ground at last, and to make green pasture for sheep. But then the unknown movements of the sea bottom may throw up fresh masses of crushed shells and sand, till the new banks mount the dunes, and stream

down their inner slopes. The peculiar sandhill vegetation is smothered, the sea birds that nest among it are banished, and the special insects that feed upon it are destroyed for many years, or for ever, along that range of shore.

THE hills of grey, mountain limestone which rise from many of the northern and western vales form a separate kingdom of nature among English landscapes, with distinct and constant features. Only a thin cloak of reddish soil overlies the rough, grey rock, which juts out along the slopes and shoulders of the hill in rain-whitened scars and bosses ; but the turf is sweeter and finer, and cropped more closely by the flocks which range the walks, than that nurtured by any other soil but the chalk of the southern downs.

The distinctiveness of these hills, wherever they occur, is due above all to this close and thyme-strewn sward, as sweet to man as to the beasts, and to the grey limbs of virgin rock that thrust themselves so constantly and easily to the sun through the cloak of hanging pasturage. In the summer heats the thyme-flower flushes the hillsides with a pale and delicate purple, of kindred softness with the silver and pale orange of the lichens that stain the rock and the blue of the distant plain. Far into the autumn, on all the warmer days, the scent of the woven thyme-strands hangs, like their native breath, round the slopes and summits of the hills. Even in the mild and brilliant noons that come now

and then in winter after rain, the sunlight distils a faint perfume of August from the sodden leaves. The fires of far-off summer seem to linger in the dry rock of the hills, even when all other soils are soaked to midwinter mire, or filmed with the sour hoarfrost that skims the meadows between the colder rains. The damp of the hollow lanes and woodlands find no harbourage on the open slopes, that dwell, with their haunting breaths of summer, in a zone of purer air.

Many other characteristic plants of the limestone hills besides the thyme are seldom found so abundantly elsewhere, except on the distant slopes of the chalk, which nowhere form part of the same English landscapes. Most individual of all is the golden cistus or rock-rose, which shakes out its disc of crumpled petals on a low, branching stem. The yellow rock-rose is the buttercup of the limestone pastures ; and it is as much more delicate than either the true buttercup of the blazing May meadows or the bronze-backed celandine of March, as the turf from which it springs is finer than the herbage of the lowlands. The fringed leaflets of the rock-rose are of the same deep and glossy green as those of the thyme, and are often found so closely intertwined with them among the fibrous carpet of the turf as to cause surprise at their scentlessness. The crumpled blossoms hang on their stems as tremulously as foam, and are hardly more enduring. Their prime is gone in a few hours of summer sunshine, and they only open to the sun. After a summer night of rain, when the morning sky is roofed

with even grey, and the raindrops gleam mistily upon all the blades of the sward, only the tips of the unfolded buds gleam faintly yellow along the slope of the hill; or here and there a beaten petal of yesterday clings, a wet film, among the grass roots, and forms an object of curious but ultimately unprofitable inquiry to the little red wandering ants.

Such still and canopied mornings are nature's summer Sabbaths, bringing a rest that is pleasant to all her creatures after a week overwrought with the sleepless incitation of the sun. Even the red ants move with a more leisurely gait among the grey hills of water on the grass blades, and investigate the nature, origin, and practical utility of the clinging rock-rose petal with antennæ plied more idly than is their wont. But when the August morning opens hotly through the sheltering mist, the lower slopes of the grey-scarred hills, where the wind shears the sward less closely, is often one long garden of these delicate heads of gold. The exactness with which they cling to their dry, calcareous soil is often seen very strikingly on the borders of the limestone tracts. One slope of a little grassy valley may be formed by a limestone hill, and the other, perhaps, by the sandstone which commonly overlies it. Then on one side of the little stream that often breaks out at the foot of the dry, limestone mass, the turf may be gay with rock-roses, while on the other bank the only flowers in the grass are eyebright, or blue scabious, or a few faithful daisies. The rock-rose is also to be found in sharp, gravelly places,

where the soil is neither limestone nor chalk ; but here it grows weedier and less graceful than on the hills where it fringes the milky chalkpits, or the grey protrusions of the heart-rock of the limestone hills.

The difference is great between the characteristic scenery of the curved and sweeping downs and the limestone hills, with their naked scarps and terraces, and rough outcrops of rock that nature has never clothed. But the flowers, trees, and shrubs are so often identical in kind, and so widely distinct from those which are characteristic of intervening soils, that they continually call up associations of far other landscapes, and of distant tracts where the ancient diversity of the English races and kingdoms still permeates the landscapes and their life. In a grey gorge above the Severn Sea, the whitebeams and guelder-rose trees, paling to the fresh June wind, recall the long line of Surrey and Kentish downs that gazes over all the Southern Weald, or of the Danish battle-grounds on the hills of inland Thames. The white-plumed dropwort is familiar on the grassland of both soils, and so is the deep blue campanula, which supplies among the flowers of English hills the true gentian blue, not found in any gentian of our own, except a rare Alpine survival among the hills of Westmorland. These two flowers are less abundant on the limestone than on the chalk, perhaps because the limestone lies in the rainier quarters of the island, while the chalk is sunny and dry. But one beautiful climbing shrub, which is fonder of no soil than of

the limestone, is the wild clematis, or old man's beard, as it is called in some limestone regions. As the leaves begin to fall in September, the down of its ripening seed-plumes whitens on hedge and tree; and when the splendours of late October blaze among the beechwoods and thickets of the hills, they are illumined by its cascades and streamers of hoary grey.

Just as the soil governs the flora native to each district, so the character of the plant-life has a strong influence on the local butterflies and moths. Though the perfect insect may drain the nectar from many different blossoms, in its hungrier caterpillar period it is often strictly dependent on a small group of plants, or even on a single species. The variety of plants and grasses in the herbage of the limestone hills has thus attracted for ages a distinctive and richer insect life than is found on many other soils. The difference is to be noticed most strikingly when the same tract of country offers an easy comparison between the limestone and some heavy clay. In many clay districts the monotony of plant-life is remarkable. The landscape may be no less verdant than that of other soils, and the fields and hedgerows hardly less bright with flowers. But a small group of species have the task of clothing the entire face of the soil, and recur with a poverty-stricken monotony. Yet within less than a mile, perhaps, the skirts of the limestone hills are rich with thyme and marjoram, centaury and yellowwort and St. John's wort, among characteristic flowers, as well as their own

trees and shrubs, and a multitude of obscurer herbs and grasses. The boundaries of the moths' and butterflies' haunts are scarcely less sharply defined. There is one abundant but local moth, the treble-bars, of which the slender caterpillar feeds on the leaves and blossoms of the perforated St. John's wort. It is therefore confined to the dry or stony localities where this plant is found; and the margins of thickets on the limestone are one favourite haunt.

Throughout a large part of the summer the grey wings of the treble-bars may be seen dashing up in precipitate zigzag flight at almost every step from the broken, stony ground; the moths are more abundant even than the grasshoppers, which love these hot, dry slopes. But wildly as the grey moth seems to hurl itself upon the air, it is seldom found even a single field away from the margin of its proper soil. Sometimes, in windy weather, a single waif may be disturbed from a more distant hedgerow on the clay; but it is as impossible for it to rear its kind in this barren spot, void of the least sprig of its indispensable herb, as for an Arab to colonize the snows.

In their bolder and more broken tracts the hills of mountain limestone provide some of the most individual features of English scenery. The bare protrusions of rock, which are characteristic of the hillside pastures, even when they are hardly large enough for two sheep together to couch on their well-drained warmth, become, on a larger scale, the great scars and terraced crags of some of the

grandest dales and moors. The cool, grey rock, riven so boldly, and as though of its own pleasure, into its precipices and gleaming scarps, carries in the midst of its rugged and solid grandeur a sense of the strange corroding forces which make it porous to its very heart. The famous cloven valleys of Derbyshire and the Mendips, and the many scars and crags of lonelier and more isolated moorlands, are only the external gravings of a vast and secret process of natural disintegration which hollows the core of the rock. The clear and thyme-strewn sheep walks are raised to their open place in heaven on an underworld of caverns and pillared fissures. Comparatively few of these have yet been explored by man, though in many of the world's great limestone regions the caves that have been tracked and rendered accessible rank among the greatest of natural marvels. Bearing the acid from the atmosphere that eats out the lime of the rock, the subterranean rivers are still endlessly developing their profound recesses. Many of the known ranges of caverns in the Mendips and the Pennines have never yet been fully traced, and there may be others even vaster to which no access is known. In the caves which have from time to time been threaded, after leading the explorer on from hall to hall, and shaft to shaft, the stream may finally defy him by plunging down a vertical rift into unknown depths.

Even in the outer sun, on the sheep-cropped turf of the hills, the swallow-holes, where the streams descend by their Avernus, have a strange and

uncanny fascination. A stream is never safe on limestone soil; and though, from the porousness even of the more solid masses of rock, daylight streams are rare among the higher hills, a brook coming with a light course from miles of less permeable soil is often trapped and drawn downwards as soon as it strikes the riddled zone. When the stream is an intermittent one, so that for many months of the year its channel is empty and dry, the swallow-hole looks doubly strange. If the rock is overlaid with a thick layer of soil, as often where it first rises from lower ground, the swallow-hole may be at least twenty feet deep, nearly circular in shape, and narrowing inward to the bottom, where the actual orifice is choked by loose earth and leaves. In the long idleness of the drier months the sides of the funnel become sown by ash-seeds and sycamore keys, or threaded by the roots of some overhanging elm, so that saplings have freely sprung, and the hollow is a nursery of well-grown trees, clinging to the circular banks. Ivy hangs about their trunks, with fresh green blossom springing from the brown flood-stain of last year; and when the October sun falls warmly on the rounded hollow, the wasps suck their last banquet by the nether portals, and the broad red admiral makes sudden sallies into the sun. But the week comes, in every normal winter, when the earth is awash with rain, and the brook that runs modestly under the hedge at the ploughed field's side comes sweeping round the thorn-roots in the hedgerow, and crowned with earthy foam. Then the swallow-

hole is choked to the brim, and the turbid waters circle endlessly among the elm-trunks in its vortex ; a core of floating litter in their centre shows the pipe where the limestone rock is straining them slowly down.

THE windfalls of stormy August weather on the garden walks show us how quickly the year matures towards harvest and decline. Only three weeks earlier, the lime-blossom poured its scent across the lawn, and the hum of the bees dwelt all day in the upper boughs; but now the lime-boughs are silent when the wind is still, and the little green pellets of the unripe seed-vessels come pattering down singly in the gusts, or float to leeward on their protecting shards. Lime-blossoms need the traffic of the bees to mate the anthers of one flower with the stigmas of another at the right time, since they are not ripe in the same blossom together. But the flowers are of one sex; and the lime therefore sheds no such shower of overblown male blossom as often lies in a thick carpet beneath the beeches in May, and falls from the Spanish chestnut in the August wind. The catkins that covered the crowns of the chestnuts with a silky lustre are strewn in faded ropes about the pathways, still exhaling a faint perfume which we seldom catch from the flowering tree among the many scents of July. The sweet chestnut is the last of the forest trees to flower; and when its boughs resume the deep green proper to late summer, after the blossom has fallen, it is not long before even in the coolest

country gardens the first crisp lime-leaves drift down.

In towns the winds of August thin the foliage more freely. After the first burst of July heat the toasted leaves of planes and elms and limes begin to drift thickly down; and if the heat has been prolonged and severe, the trees in the parks and square gardens become noticeably thinner against the sky. Untimely bonfires begin to smoulder in corners of the parks, intruding on the disorganized natural calendar of town with a breath which belongs in the country to late September and October. In town and country alike, leaves, and clusters of leaves, fretted through the long calm days by summer caterpillars and cockchafers come tossing to earth in the August rain and wind. The same winds cast down a sprinkling of the caterpillars which have caused the decay. A sudden gust may catch them when their great hind claspers are relaxed in crawling; or sometimes the leaves that they have half gnawed give way, and they plump down, grasping the torn fragment. The long green caterpillars of the buff-tip moth, with their parallel black lines, are among the commonest of these living windfalls. They feed in large colonies in the upper boughs of elms, limes, and several other trees, on which large patches stripped bare by them can often be seen from below in later summer. Their ravages are more concentrated on a single bough than those of the minute leaf-roller caterpillars which strip the oak-tops in June, but they work more thoroughly within their limits.

The large, horned caterpillars of various hawk-moths also fall now and then from tall trees in the August winds. Even under the lime-trees in Kensington Gardens in London, where the smirched leaves do not seem to offer very dainty pasturage, a lime hawk caterpillar fell once among the withered leaves. For many minutes after the shock the caterpillar feigned death; then, seeming none the worse, it wandered away on new adventures. Caterpillars are blown down most easily when they are full-fed, and the approaching change to a chrysalis makes them flaccid and uneasy. If it is ripe for the change, a fall to earth may do the creature little harm; it will soon burrow in the soil, and form its loose earthy cocoon. But if it still needs food, it has no instinct to climb the tree into the green leaves again. Instinct brings it creeping to earth when it is time for it to change, but does not arrange to send it up again if it falls too early. The fate of a wandering hawk-moth caterpillar in the London parks is usually to perish as an object of horrified interest at the hands of some band of children.

Wet and windy weather is common in early August, when north-country farmers look for the Lammas floods. There are usually days at this time when the bronzed masses of a leafy landscape shift from dawn to dusk in a restless chequer-work as the leaves toss their pale sides to the wind. Beneath a grey sky and over the dull brown of grass first parched, then sodden, this contrast of darkness and pallor in the tree-tops has a strange

effect. The colours of the landscape are more decided than those of our winter months, yet lack all the freshness of our normal summer. The swallows are disturbed by the change, and flit uneasily in the lee of the wood, or sweep low over the wet, dun pastures where the grasshoppers should be chirping. So they will sweep over the autumn mustard fields on their last English flights in October, when the due season of rains is come; but there is something disturbed and untimely in this August restlessness. More marked are the similar storm flights of the swifts. They are now on the eve of leaving us; they will not face the autumn rains. But when wet weather beats down in early August, we see their sooty sickles sweeping above the heads of the yellow grain, in circles like the swallows' flight, but more powerful. The swifts' flight above the dead-ripe corn is one of the rarer pictures in the round of the English year, and may hardly be seen once in a decade. It needs an early harvest time, with wind and rain on some day before the corn is cut, and the swifts are gone. When the sun comes out between the showers, and the brown and white butterflies flutter in the wind above the corn, it is curious to note that swifts, like swallows, disregard this easy and apparently tempting prey, and seem to be feeding exclusively on insects that we cannot see. There are no brown butterflies in the empty vault of sky where our swifts habitually prey, though Alpine butterflies of the same tribe drift at times over the tops of the highest mountains. But when the swifts

change their feeding-grounds, they might be expected to modify their diet; and their rejection of a butterfly helps to explain why they leave us when the rich insect life of midsummer begins to abate. A less discriminating appetite must be one reason, and probably the most important, of the swallow's later stay. When the daddy-long-legs or crane-fly emerges in its great flights in late August and September, swallows can often be seen flocking over the benty pastures to snap up the awkward insects as they rise.

The grave and even colours of the ripening corn crops make a marked contrast with the shifting hues in a midsummer hayfield. When a wet hay-time prolongs the mowing of the last fields till August, the crop loses all its natural brightness, and stands faded and discoloured, with chaffy seedheads and dry, over-blown flowers. But in June or early July the bloom on the various species of grass makes a shimmer of hues almost as soft and diverse as those in an opal. Quaking grass gleams like inlaid steel, and moon-daisies and pink ragged-robin and yellow rattle diversify the field with flakes of colour. This diversity is in keeping with the spendthrift freedom of spring and earlier summer. By the time of the corn harvest the lengthening nights already tell of autumn; the strength of later summer is concentrated on ripening its fruits. Then we get the deep and uniform glow of the red-gold wheat, or the paler stain of oats or barley, spread evenly between the darkened hedgerows. Only among thin crops on light, sandy

soils do the colours of the cornfield weeds tinge the expanse of a field at harvest-time. There the clear yellow of the corn marigold and the daisy-like blossoms of corn chamomile may still hold their own too well; but elsewhere the poppies have faded, and the charlock is hiding its beaked seeds. The weeds still blooming in a thick field of standing corn peep singly among the ears, and can only be seen close at hand. The small pink convolvulus still climbs persistently with its tangled bines; but it wastes too much effort in doubling and trebling its loops to arrive often at a place in the sun. The most conspicuous of all the weeds in a ripe corn crop is the large field scabious, which has a long flowering season in later summer, but is at its height in the early days of August. It is a beautiful wild flower of grassy banks, which earns the name of a weed when it strays into the corn; and it steals among the parched barley and glowing wheat with the gleam of purple which is the signal of the year's decline.

Foxglove stems, whipping stiffly in the Lammas rain, have dropped all but the highest of their long chain of bells, and no longer light up the dark shadows of the beeches. They began to bloom early in July, and the colour of the opening blossoms moving upwards marked the progress of the month to the eve of harvest. More local, but even more abundant in certain woods, the rose-bay willow-herb is also nearing the end of its season. Already its thistle-like seeds begin to drift far in the rough, south-west winds, entering railway carriages and

other unexpected places on their unconscious search for a new seed-bed, and even hovering in the London streets. The great willow-herb follows it by the water-sides, and reaches its full height in August. As the month goes on, the caterpillars of the elephant hawk-moth can be found resting on its leaves, with their intimidating pattern of glaring eye-balls. The spires of the purple loose-strife and the lilac blossoms of various mint-plants multiply in the same river-side beds. Simultaneously a tide of purple spreads from the corn-fields and streams and woodlands to the bare moors and the open fringes of the sea. Heather bursts into bloom when the freshness of the early summer verdure is spent; and, like a dream of heather borne with the drift from distant hills, the stain of sea-lavender flushes the tidal estuaries. High on the downs the flowers of later summer lightly fleck the sward with the same pervading hue. Here the dwarf scabious replaces the tall scabious of the lower fields, and has the same late summer dye. Thyme streaks and splashes the turf with the purple blossom that seems to exhale the very spirit of August afternoons. There is often a tinge of purple in the harebell's delicate blue; and the small autumn gentians obscurely star the turf in strong sunshine, and sleep closed in the flurrying rain.

BENEATH the apparent dullness of bird-life at harvest-time there stirs already the impulse to depart. In May and early June, when the birds seemed most restless, they were tied to one place more than at any other time of year. All their interests were concentrated on their nests; and their activity was due to preoccupation with this one anxiety, or to the need of feeding the young. Now, when they seem to lead so settled and peaceful a life under the canopy of the garden shrubberies or the darkened woods, the instinct of winter wandering is already working within them, as the nights grow longer and the mists cling cooler at dawn. The murmur of the sedentary wood-pigeons fills the solemn gardens of later summer with a deep sense of peace, but it is a music of illusion. Already many of the birds that nested in and about the gardens have left their haunts; they have gone on a restless and shifting journey, under the impulse of a swelling tide of change.

By the beginning of August the swifts are already streaming southwards, though it is not until the middle of the month that we may first miss them from their haunts. In the depths of the bushes, which are unknown to these birds of the high air, pedestrian humanity can spy the furtive August

ways of finches and warblers, and penetrate the perplexing disguises of moulting adult plumage and the first dress of the young. Birds are never so confusing to the eye as in late July and August. Those slender yellowish birds slipping silently among the currant bushes are young willow-wrens; a few weeks ago we saw them as downy atoms in the nest, and we may not catch sight of them again till they return in the familiar olive dress in early April. A harsh repeated call in the hawthorns at length challenges us to see what bird jars so monotonously on the August calm. The cry proves to be uttered alternately by two young bullfinches, keeping in touch by these untuneful signals; they wear an unfamiliar dress of dingy greenish brown, and but for their beaks and the characteristic white patch on the back would be hardly recognizable. These elusive phases of August life speak strongly of passing immaturity and the coming of stormy change.

In the wider fields outside, the change to autumn restlessness is more marked. For a month past the peewits have stopped screaming above the meadows where their young were hidden; and now, with their flight feathers gained, the young have left the glossy cover of the marsh marigold leaves and form with their parents a troop of lapwings in the sky. Jackdaws and starlings feed in flocks in the pastures, and wood-pigeons begin to form small parties distantly foreshadowing their great winter packs. The unit of every bird-flock is a single family party; and in early August we can see the first aggregation

of a few families into a small flock. The peewits of a single water-meadow join as a flock of perhaps a couple of dozen birds ; and on lawns and in grassy glades we see how two or three pairs of wood-pigeons, with their smaller families—two to the peewit's four—form neighbourly foraging parties before roving afield and joining some band of strangers. The young pigeons are almost as large as the old, but they do not wear the white neck-patches or "ring," so that they can be easily distinguished in these groups. Now, too, by brooks in lowland meadows, appear the brilliant grey wagtails—brighter by far than their name—which nest by the sparkling hill streams and winter by slower southern waters. Even before the end of July they begin to reappear, wading in the little brooks shrunk by the sun, or dancing on the lip of the weirs. A few pairs nest each year by plashing waters in the lowlands ; but they too seem to begin wandering as soon as their young are fledged, and appear as forerunners of autumn before the corn is yet yellowing.

Grey wagtails are regular rather than very abundant migrants ; but a vaster migration takes place in August from the hill country, when multitudes of curlews, dunlins and other wading birds leave the moorlands and troop with their young to the shore. This migration is peculiarly characteristic of bird-life in Britain, where both high moors and sandy shore lines and estuaries are typical elements in the scenery. The return of the waders to the strand is a delightful feature of many low coasts and oozy havens in late summer, when the

yellow horned poppy is passing over, and the sea lavender spreads its misty lilac on the flats. This migration of our native waders lasts from July till late in September, though mid-August sees its height. Early in spring, while snow-storms still whiten the moors, the curlews settle in their nesting-quarters among the bent grass or heather, and halloo with their wild and varied spring cries round the shoulders of the hills and high above the valleys. By mid-July their young are usually fledged ; and soon afterwards old and young begin to journey to the sea, where a sprinkling of immature and unmated birds has remained all through the summer. With them come the little dunlins, from their nesting-places on the same moorland hills or from sea marshes further to the north. Green plovers are as abundant by the estuaries in later summer as in inland fields ; and oyster-catchers and golden plovers and redshanks form less numerous contingents. By September a great throng of waders from the far north begins to pass through England, as birds of autumn passage, and mingles with the flocks on the shore. But in early August the foreign army has hardly begun to land, and the vast majority of the flocks of waders seen by salt water are British bred.

The movements of these flocks of waders add life to the wide harbours and tidal rivers, where they chiefly gather. Even in July the number of birds begins to increase, after the comparative depopulation of the nesting season. Gulls drift back to their winter haunts, diversifying the patchy plumage of

immature birds with the variety of adult white and grey and the uniform pepper-and-salt mixture of the young in their first plumage. The young gulls are now as large as their parents, and often much plumper; but the cry of a young herring-gull is feeble and mewling, ludicrously out of proportion to its size, and recalling the puny voice of the fledged cuckoo. Parent gulls are silent now, compared with the tumult of hound-like yelps which they poured forth round their nest-rocks in May; but now and then a patient and melancholy note is flung on the August air and wakes a harsh answering clang from the herons standing like posts far out in some trickle among the ooze. The sheldrakes lead abroad their troops of ducklings in July, to scuttle cheerfully over the heaves of the mud-banks or to float happily at low water in some sand-barred creek. By August the shell-ducklings are almost as large and brilliant with chestnut and black and white as their parents, and drift with them in shining bands on the surface of the incoming tide. They form a beautiful picture of August peace; but it is belied by the restless activity of the troops of waders. Curlews are ever restless and wary, rising and calling across the sands with the melancholy and musical notes which remain after the most jubilant spring cries are gone. Redshanks open their wing-feathers as they spring into the air with a repeated flute-like call, and vanish from sight on the brown sand or grey mud-banks as they close their quills on alighting. But of all the birds that haunt the tide, the most numerous and conspicuous are the dunlins. Grey-

brown above and silky white beneath, they skim in great flocks like starlings at roosting time, flashing in the light as they veer from side to side, and flicking the air with the sharp-cut wings of their tribe. These sharp wings heighten the impression of speed and add to the grace of their flocks. Once settled, they are as inconspicuous as the redshanks; and when they suddenly rise at some alarm, or at what they pretend to be an alarm for mere restless desire of movement, the leaping of their white breasts into the air is as if the sunlight on the wet banks had come alive. They have the same habit of twisting simultaneously in flight which is conspicuous in flocks of starlings and other gregarious birds, but is emphasized in the dunlins by the speed at which they fly. Literally in a flash the flock has changed from grey to shining white, and is cutting the air at a different angle and on a different plane. The thistledown dancing on the August wind is like a drifting cargo-boat beside the dunlins' agility and speed.

In inland places the progress of this August migration of the marsh birds is divined obscurely and at night. An hour or two's flight, at most, will carry the curlews and dunlins from their moors to the point at which they touch salt water; and it is a rare accident to see a straggler halting by day in districts where they neither breed nor winter. But liquid cries of passing flocks are heard overhead after dark; and these voices, passing from one solitude to another, are noticed with especial frequency over great towns. The birds seem to be excited by

the lamps aglow beneath them, or by the huge bird-like voices of railway engines, shrieking through the subdued roar of the town. On foggy nights of autumn the perplexed flocks sometimes descend to the lights, and can be heard passing close overhead, or circling with confused altercation. But in serene weather we hear a call from whimbrel or curlew, or the twisted note of the plover under the starlight; and they pass away with that clear "All's well" to the sea-flats glimmering in the dawn.

DURING a spell of warm and cloudless weather in September, the garden is filled with a sense of the dominance of sunshine such as only recurs in the round of the English seasons at the period of the other equinox, in a brilliant March. From the time when the trees begin to bud in April up to the end of August, the stir and business of all forms of natural life are so intense that their activity inevitably distracts the attention from the underlying wealth of sunshine which quickens their birth; and in spring and summer we can hardly take note of the sun's out-poured warmth as a primary element in the landscape. But in September the touch of chill in the mornings that gives back the garden robins their song puts a sense of pause and rest upon the whole course of the year; and the profusion of golden sunshine becomes the most conspicuous display of nature's power.

It fills the spaces of the flower-bordered lawns with a warm glow, touched with a rich and hazy opaqueness, which is even richer and deeper than the strong colours of the September blossoms. In the earlier season of brilliant equinoctial weather, the soil is still almost naked of new spring growth,

but the song of the birds is unceasing. Now, though the garden is stately with the tallest and richest blossoms of the year, the silence is profound and rarely broken. At both times there is a void background in nature, compared with her activity in May or July, against which the wealth of pure sunshine stands out with the same kind of concrete vigour and splendour as on the empty fringes of the desert.

At the time when the mellow sunshine of September fills the garden spaces with the richest haze of gold, the lengthening and deepening of the shadows brings a contrasted effect of solemn and stately beauty to the same bright beds and lawns. Very much of the peculiar beauty and fascination of the September garden is due to the increased prominence, at a still early hour of the afternoon, of the large and slowly stealing patterns of velvety darkness which the sun casts on the sward. The lawns are richest and greenest at the summer's end in a moist and lukewarm year; and never are the shadows of trees more beautiful than at that hour of middle afternoon on a still, sunny September day, when the earth seems to settle to a deeper hush, and the sunshine takes a tinge of riper gold. There is no such perfect medium for shadow-tracery as smooth and well-kept turf; and this particular feature of beauty is therefore only to be seen at its best in England, for there is nothing to be called turf in foreign gardens, where the grass grows mistrustfully and in separate blades, like corn. Neither is there any time of year when the shadow-

pageantry of a lawn and its trees are as well seen as in September. Earlier in the summer the shadows scarcely begin to stream across the grass until the time when most of us are indoors ; nor have these stately garden skiagraphs the same velvety depth and darkness in the clear, high light of a mid-summer evening as they gain from September's tempered suns. The increased range of the shadows helps the longer and cooler nights to keep the grass and flowers in the September garden vigorous and green in spite of the brightest sun by day. In July a succession of four or five cloudless days entails, at least on light, gravelly soils, the flagging of much vegetation and the fading and thinning of the garden turf. It is only now that the longer hours of darkness and the more copious nocturnal dews make the enjoyment, day after day, of perfect sunshine compatible with the lawn's full greenness and the blossoming of the most delicate or thirstiest flowers. They have now that large, firm beauty which shows that they have the full supply of moisture which they need.

Where all the hedges and shrubberies of the garden were busy, a few months back, with the life of the nestling and new-fledged birds, now the silence is broken by comparatively few signs of life. The tide of bird-life has ebbed away from the garden ; this year's nests are already old and battered, and, in spite of the rankness of the autumn vegetation, we see many of them thrust into conspicuousness by changes in the leafy screen,

which at midsummer were hidden from our eyes. Only the martins under the eaves may still be bringing up their latest brood, which will hardly be ready for flight before the time of the migration is at hand. So long as September weather is fine, this month is almost as favourable as any other for nurturing their young. As can easily be seen, and even heard, on any still day in the garden, the air about the tree-tops is alive with the small insect life which they need ; and it is only the restriction of the daylight hours of insect-seeking which makes a fine September less favourable for the rearing of their young than June.

One other bird which may occasionally be found nesting in some tree in the garden even as late as September is the common wood-pigeon, which now nests all through spring and summer, like the sparrow. Both birds seem to have got the better of the balance of nature, and to breed without rule or check. It is characteristic of the depleted bird-life of the September garden that, though there is actually more song to be heard now than between the second week of a normal July and the end of August, here the bird-voices are much rarer and less insistent. Even after the last thrush or black-cap has ceased singing in the sycamores, the hotter weather of July seems to incite the sparrows in the ivy on the house-walls and in the trees to an endless jarring chirp, more restless than the grating of the cicadas on a parched hillside of summer Italy. The greenfinch, too, has a dismal drawl which seems to be squeezed out of him on hot afternoons

by some tireless mechanical power ; to the human ear it grows wearisome, in the sultry days when the air seems waiting for thunder. In September, on the other hand, such bird-voices as are to be heard are mostly sweet and tuneful, while some are full of a strange and haunting charm. After the silence which fell upon them in July, the gradual resumption in September of the robins' and thrushes' songs seems a reaching out of hope to the far spring which lies beyond the winter. The cooler springlike touch in the autumn temperature seems to arouse in them the instincts of spring. Most striking of all is the fitful autumn song of the slender chiff-chaff, which all the summer has haunted the trees of the garden, and comes "before the swallow dares," to make a new note among the budding larches. Among the sycamores and walnut-trees of the lower Alpine slopes, his clear, monotonous cry often peals out with spring-like vigour in the gleam of a September dawn. In England he is not heard so loud or so regularly, when once the general silence has fallen in July. But his voice may yet be caught from time to time among the trees of the garden in September and the early days of October, chiming a faint echo of his herald-cry in spring. Yet what leagues of land and sea must the chiff-chaff traverse and retrace, before spring brings him back to the garden's fringe where he will nest in May.

So profound a calm of nature rests on the garden in the September sunshine that, instead of a con-

tinual going and coming of butterflies and breezes, voices and clouds and birds, the entry of any new wanderer or waif of the air is an event in the garden day. Rarely a flock of titmice, gathered already for their restless autumn wanderings, are heard to pass from the outer fields into some belt of trees or shrubbery, and chirp and twitch their passage across the garden, till they are seen no more, and the silence falls again. A clot of pearly thistledown floats in on an unfelt tide of air, and drifts slowly across, like a medusa through a garden of the sea. In the high days of summer there is never this sense of utter stillness, so long as full daylight is in the sky. It is only in the early midsummer dawn, in those grey moments just before all the birds strike up together the amazing babel of their first brief spell of song, that the garden flowers wear this strange expression of silent expectancy. But in June it is expectancy of the living day, and now only of the deeper sleep to come. Even if we cannot actually see the June flowers grow, the whole poise of stem and leaf and tendril shows clearly that they are growing. In September the lines of every plant show with equal clearness that it is standing at the full limit of increase. The cessation of vegetative vigour is also indicated plainly by the infrequency and heaviness of the scents of flowers which are wafted in a September night. At midsummer the night-air is drenched and intoxicated with the conflict of pressing perfumes; now, the odour of such flowers of autumn as the white tobacco-bloom does not seem to pass

beyond a narrow space around the plant itself, and the dominant scent is the faint tang of the field-fires' smoke, mingled with the autumnal damp. At the edge of the pasture the scrape of the horny dor-beetle in his underground galleries can be heard, in the intense cessation of sound, for several minutes before he dimly emerges and blunders fieldward upon the wing. The light of the thin new moon, hung, "like a little feather," in the low western sky, faintly illumines the tarnished foliage of the garden elms, and strikes with fantastic clearness on the one golden bough where autumn's finger is already laid. The tall September blossoms stand ranked all down the path, with the faint light dimly revealing the yellow heads, and leaving the crimson ones blind to the touch. This half-veiled hour after nightfall in the September garden has a beauty scarcely less than that of the sun-filled afternoon; and though the characteristic silence of the month is hardly greater by night than by day, it seems deeper and more absorbing from the added deprivation of the light.

Yet amid all the silence of nightfall in the garden, there is often one odd and impish figure whose activities fill the calm spaces of the open lawn with a curious contrast of unrest. Where the grass gleams pale and grey, a small dark object can be seen moving persistently to and fro in a broken and rapid run. A match struck in the still night air will disclose this impatient spirit of the night as a hedgehog, quartering the lawn for his prey of beetles and worms with cunning,

twitching nose, and a turn of nocturnal speed for which few might give him credit. He trots off contemptuously into the night, to hunt with the squeaking bats among the flower-beds under the September stars.

THESE still flower gardens of September become the chosen and constant resort of many of the largest and most handsome of English butterflies. Partly they are drawn to the gardens because in these weeks of late summer and early autumn nearly every garden reaches the high-water mark of its floral richness. Not even amid all the wealth and riot of midsummer are the sheets of colour in a garden so vivid and strong as in these later harvest days, when most of the tallest and stateliest of garden flowers are in bloom, and the general standard of colour is many shades deeper and richer than it was in the freshness of June. But the concentration of butterflies in the September garden is due even more to the comparative absence of blossom at this season of the year over large tracts of the country outside. For many weeks the fields which were so rich with the flowers of the hay-crop in June have been vivid, perhaps, with a rain-quickenened aftermath, but almost wholly void of blossom. There are few blooms in an August hayfield but a few white yarrow-heads and a sprinkling of yellow hawkweed. With the reaping of the harvest, the cornfields become equally unproductive from the butterflies' point of view ; while there are but few flowers left blooming among the rank and over-

shadowed verdure of late summer in the glades and rides of the woods. Nature in September provides herself with a few flourishing oases of blossom for the butterflies' needs, such as the beds of sweet marjoram which still tinge waste downs and hillsides with dull lilac, the sheets of purplish scabious which draw insect life in marvellous abundance and variety to their nodding heads, and the banks of hemp agrimony by the river. But such wild flower-beds are now scarcer than hospitable gardens; and so it comes about that at the time when the main broods of many of the finest of our butterflies are hatched, they are driven to present themselves to our view by the scarcity of good living in the wild.

There is great charm and attraction in the living brilliance which September butterflies add to the deep reds and burning yellows of a long flower-walk, or to the many-coloured border ranged beneath some old red wall. Like the flowers on which they rest, the characteristic butterflies of this season are of hues more deep and sun-stained than those which answered to the clearer skies. The colour and markings of these splendid peacocks, and red admirals, tortoiseshells and painted ladies, which flit and float in the sunshine down every pathway of blossom, are not only extremely beautiful in themselves, but preserve the subtlest harmony with the whole scheme of floral colour in autumn. In late June and early July, when the garden was full of the clear beauty of white pinks, and pink and white roses, and white Madonna lilies, there seemed something bizarre and intrusive

about the red admiral's wings of lustrous sable, edged by deep crimson bands, their dark brilliance only heightened by a sparing touch of white. Its livery is not of that season, and then it is far rarer. But now, in the days when all its young are abroad, their swarthy brilliance is in full harmony with the riper tones of the September garden. They feast on the juices of the fallen plum or pear, or on the honey of the heliotrope bloom. The hints of deepening autumn always present in the still and hazy sunshine of September seem gathered to a focus in the peacock's and red admiral's wings. In every September garden they are the living emblem of the splendours of the declining year.

These four butterflies, with the yellow brimstone and his paler greenish-yellow mate, form the most handsome and conspicuous group among the numerous butterflies and day-flying moths which throng the garden flowers at this time of year. Not one of them, it may comfort gardeners to know, does the slightest harm to any cultivated plant at any period of its life. A well-known novelist, writing for the nonce a book about a garden, solemnly exhorted the gardener to wage war in defence of his flowers on butterflies of every kind ; and the same belief seems general among professional gardeners, even those of the finished Scotch type, who may be strangely versed in theology or logic. They have a practical familiarity with dichotomy from which no caterpillar may hope to escape. In point of fact, the caterpillars of the peacock, red admiral, and small tortoiseshell butter-

flies all feed on stinging-nettles, while those of the painted lady live on the thistle. The commonest food-plant of the brimstone caterpillar, the wild buckthorn of waste places and hedgerows, is a shrub with whose welfare the gardener is scarcely more closely concerned. All these butterflies are rather the allies of the gardener than his foes, and co-operate with him, for the most part, in the suppression of his enemies the weeds. The only kinds of butterfly against which the gardener has just cause of complaint (about moths, indeed, there is often a different story) are the large and small whites, which, in spite of their specific distinctness, are united, during the larval stage, in a taste for cabbages and other green things of the gardener's care. It is the widespread cultivation of cruciferous plants by man which has multiplied the "common white" to its present state of abundance. It is a rare insect even now in mountain and moorland tracts far from the humblest kailyard, and must always have been scarce so long as it was dependent for its living on the wild sea-cabbage, and perhaps a few other related plants of the cruciferous order.

The white butterfly is as thorough a parasite of humanity as the sparrow; though it can do less harm, it does all the harm that it can. Yet the damage done by both species of cabbage butterfly is almost trivial compared to the ravages of the far more offensive caterpillar of the cabbage moth. It is the moth and not the butterfly which is the parent of the mottled smoky-grey caterpillars

that drive their nauseous burrows deep into the white heart-leaves of the cabbage, ruining it much more effectually than the caterpillars of the two butterflies, which rarely penetrate so deep. But the caterpillar pests of the vegetable garden form a large and painful subject on which it is only necessary to touch just so far as to vindicate the bright company of September butterflies from all complicity. Most of the "grubs" which are a serious nuisance in the flower gardens are the larvæ either of beetles or of small, obscure moths. Of moths large enough to attract the interest of the unscientific mind, when found as denizens of the garden, few in their caterpillar stage do any considerable damage to flowers or ornamental shrubs. The caterpillars of the goat and wood leopard moths will sometimes destroy a garden tree by long and resolute timber-boring; but they generally prefer a tree already unsound, and their attack is spread over such a long series of years that this form of damage amounts to little more than a kind of slow reinforcement of natural decay. Much more common and annoying are the ravages of the buff-tip moth, which lays its eggs on the boughs of elms, limes, young oaks of several species, and several other garden trees. The caterpillars are gregarious through the whole of this stage in their existence, and not merely, as is more usual, when very small. They are often to be found at this time of year descending the tree trunks, or crawling over the ground, in search of soft, dry earth in which to change to the chrysalis. The moth emerges

in May, and can then be found settled on trees or palings, with its wings wrapped cylindrically round it. The moth looks like a grey-barked chip or twig, with the white inner wood appearing at the end.

The buff-tip is an example of a conspicuous garden moth which is born and bred within the borders of the domain. The peacocks and their kin usually arrive from the outer fringes of cultivated ground, where the nettle is most common, rather than from more distant fields and woods. But in hot, dry summers there is often an earlier immigration into the garden of the typical butterflies of the open heaths and pastures, as soon as the brazen suns and brief and arid nights of the dog-days have parched the meadows to a pale and papery brown, and robbed the tangled recesses of summer vegetation of their morning dews. Though butterflies are creatures of the sun, they can by no means tolerate the dry and burning heat of continued drought. The lives of most of them depend on a very subtle balance of sunshine and sweet rains. In thirsty July weather clouds of blue and white butterflies may often be seen jostling on the wet grit in the roadway, where a passing water-cart has splashed out some of its store, or delicately sipping at the edge of the stream beneath a village bridge, as soon as the new day's sun strikes hotly upon the meadows. In such fierce spells of summer weather the small butterflies native to the fields—the blues, and coppers, and browns—come roving from the burnt-up pastures, till they find once more green grass and

moisture within the bounds of the watered garden. Yet even when they have found such an oasis in their desert, their wandering habits prevent them from settling in it for many days together, as is the way of the larger peacocks and red admirals. "It irk'd him to be here, he could not rest." Such is often the impression left on the observer within the pale of the garden, who sees the small but irrepressibly vital blue or copper press in from the gate to the fields, range for a while up and down the too narrow bounds of the brilliant flower border where the peacocks flit in epicurean content, and, after making a few fruitless casts over the foliage to left and right, depart once more on a wider quest across the meadow.

In this country the effects of positive drought on butterfly life are seldom or never so severe as to counteract the benefits of continued warmth and sunshine. A cold, unkindly summer not only diminishes greatly the number of butterflies which haunt the September garden, but depletes the whole stock in a way which leaves its effect on subsequent seasons. Yet it is probable that even a too cold summer is not so unfavourable to the continued abundance of these peacocks, red admirals, and their companions of this time of year, as is a winter of unseasonable and fitful mildness. Having no resources of food for such midwinter periods of wakefulness, they are situated much less happily than the wood-mice and squirrels, which lay up autumn hoards. These butterflies are wholly dependent for strength to sustain the long winter fast

on the juices which they drain, so insatiably and as though with conscious purpose, from the blooms in the September garden. As the month proceeds, gradually they withdraw to their secret hiding-places, where the bright colours which they flashed upon the marigold and heliotrope are succeeded by the obscure, concealing pattern of their folded wings. By the time that their favourite dahlia blossoms are blackened by the early frosts, only the last of the red admirals will be left to bicker with the wasps and drones for the honey of the ivy bloom in the October sunshine, or to drowse among the heavy juices of pears and apples, crushed on the orchard grass. Butterflies and wasps may be found clinging to their banquet together all through the hours of gossamer-haunted dark, feasting on, like King Mycerinus in the legend, both by night and day, under the shadow of the imminent end.

WHEN the corn is carried, the sense of maturing harvest is transferred to the ripening orchards. From very early in the year, the ancient grassy orchards that cover so large an extent of land in the western English counties are a focus of the advancing life of the seasons, and of the fascination of their ordered change. Science has condemned as unprofitable the whole system of these ancient orchards, with their straggling and mossy limbs, their loss in productiveness from the drain of the grass upon the soil, and their retention of many poor and obsolete varieties of fruit, of which not even the oldest farmers and labourers in the village can sometimes give the names. But there is an attraction in their hoary shadows of the same kind that enfolds an ancient house and garden, or any spot which the union of nature and man's labour has long ripened ; and they are a feature of the western landscape which it is hard for a native to exchange for bare soil, and trunks unpolished by the lazy flanks of the heifers, and flecked, in the crevices, with their hair.

In January or early in February, the great tit begins to call up spring to the orchard boughs with his metallic, see-saw cry. His is the earliest note peculiar to the opening year among the smaller

birds, though the stalwart missel-thrush begins equally early to fling his music to the winds from some buffeted bough. As soon as he begins to nest, which may be early in March, the missel-thrush becomes one of the most frequent colonists of the orchard ; but while he is absorbed only in song, he prefers, as a rule, some more commanding perch than the trees of the orchard can provide. The great tit's fondness for the apple and pear tree is shared by most of the commoner members of his tribe. The blue tit's vivid head is seen gleaming among the lichened boughs almost as often as the great tit's breast of yellowish green ; and of all midwinter scenes in the orchard none recurs more naturally to the mind than the marsh tits and cole tits searching the grey twigs in a thousand acrobatic postures above the frosted grass. It is among the bare boughs of the winter fruit-trees that the difference in plumage between the two closely similar birds can be most easily learnt ; for when they are restlessly twitching through summerfoliage there are fewer opportunities of noticing how the marsh tit wears a complete black cap above his suit of clean grey, while the cole tit's cap is parted lengthways by a paler streak.

Cole, blue, and great tits, and less frequently the marsh tit also, find in the numerous holes and fissures in old apple and pear trees many admirable nesting-places. But in winter and early spring they also haunt the trees for the insect life to be found lurking abundantly on the lichened and scaly boughs ; and in this quest for food they are often joined by the

parties of long-tailed tits, which, at every time of year except the height of the breeding season, are to be seen bobbing across the country, from hedge to hedge and copse to copse, with their soft, pied plumage and confidential cries. The long-tailed tit seldom sets its domed and lichened nest among the boughs of the apple-trees, though it sometimes chooses the thorny orchard hedge; but the deep holes where the trees have lost a limb in former years are inhabited for many years in succession by the tits of other kinds. When alarmed while sitting on the nest, they cling resolutely to their post, and utter a hissing sound which often mystifies or alarms the human intruder. Another species which nests in the same holes in the apple-trees, and is often ousted from them by that war-like cannibal, the great tit, is the curious and beautiful wryneck, which fills the orchard with its repeated cry when it arrives from the south in the first hot days of April. The wryneck is a famous hisser when brought to bay in its nesting cavern; and, from this habit, combined with the writhing motions of its head and neck, it is called in many parts of the country the snake-bird.

For nearly two months before the first shouting of the hidden wryneck is heard among the elms in the hedgerows, new life has been brought to the orchard boughs by the song of the mating chaffinch. The chaffinch seldom begins to nest until the latter days of April, when the missel-thrush's eggs in the main forks of the apple trees are already often hatched. But as soon as the thrill of spring is felt in the

February air, its one exuberant phrase is tossed from bird to bird among the boughs. The chaffinch loves, perhaps, an old orchard more than any other of its haunts. But it is an extremely abundant bird, inhabiting some moorland villages which are even unvisited by the sparrows; and it is not generally realized how much of the exhilaration and sweetness of the whole English song-time we owe to this one bird. It flourishes out its phrase with a gaiety which can never become monotonous, and an unostentatiousness which makes no formal appeal; and the beauty of its plumage and the sprightliness of its ways are as welcome as its song.

The chaffinch nests in the orchard boughs in the weeks when their blossom is at its height. The apple-blossom breaking among the half-spread foliage from the gnarled and ancient boughs is one of the most beautiful features of the English year. The perry orchards and scattered pear trees bloom, like the plum and almond trees, before the leaves expand; but gladly though we view their signals of spring, their naked blossoms lack the beauty of the mingled green, and their whiteness seems opaque and sterile in comparison with the pink-flushed apple bloom. From its close kinship with the crab-blossom of the native thickets, the apple-flower keeps a tinge of unspoilt wildness which is deeply in keeping with the whole beauty of the English land. Probably its attraction is enriched, also, by the promise of the fruit to come; for the sense of long utility to man is one great element in rural beauty. It is certain that there is no scene more

typical of the English country than the chequered sunshine of an old orchard in May, where the apple-blossom falls through the shadows on the young spring grass, and the wagtails run beneath the bellies of the feeding cows. In retrospect abroad, such a scene is the heart of England.

As the year mounts from May to midsummer, the orchards lose for a time their exceptional beauty. The last stained petals fall, and the silvered cup of the chaffinch's nest loses shape and freshness, as the young birds flutter abroad among the boughs where the ovaries of the blossom are swelling into minute green apples, or falling in blight and wind. Summer riots in all the hayfields, until they too fall; and the latest hay is hardly carried before the purpose of harvest begins to glow in the ripening corn. But when August merges into September, the orchard becomes once more the centre of the season's life. The full-grown fruit begins to globe the branches, though it may still be as green as the leaf; and day by day, if the season is plentiful and kindly, the many colours of ripeness begin to gleam in contrast among the boughs, and on the grass beneath in the sunlight and shadow of the aisles. Pale yellow or golden or apple-green, streaked scarlet or deep crimson or purple-blue, the apples deepen in colour as September lengthens, and the morning grass grows spangled with dew-hung gossamer-shreds. There is hardly an end to the different kinds of apple which can be counted in some of the older cider-orchards of the west; for many of the old trees bear but fitfully, and it

may not be until the second or third September that we first note some curious and forgotten fruit, of which the years of honour are gone by.

The perfume of the orchard is as deep and almost as varied as its hues. Many apples shed in the field the same mellow scent which is familiar in the store-cupboard or winter apple-room. These are chiefly the eating kinds. But other and less familiar perfumes are breathed about an old cider orchard in September. There is one keenly aromatic fragrance, probably derived from the more highly tannic varieties of cider apple, which is like a breath from the potherb corner of the garden, or a hillside of marjoram and thyme. Bruised by their fall and stabbed and hollowed by wasps and birds, the softer and sweeter kinds exude a heavy scent of ripeness; while from beneath other trees, or from the same as the days go by, comes the odour of the juice in various stages of fermentation. Sweetest and heaviest of all is the scent of the perry pear, in one of those Gloucestershire or Herefordshire orchards where the pear trees are ranked in noble groves. The pear is naturally a tree of much taller growth than the apple; and it needs free growth of the orchard trees to show its candelabra-like branches in full dignity. Drawn by the fumes of the fermenting juices, troops of the large red admiral butterflies haunt the orchards, and suck their fill from the crushed and hollowed fruit. With closed wings showing the delicate grey brocading of their undersides, the red admiral steps daintily among the gorged and hustling wasps, probing with

its sucker from its place a little above the throng. Then, when a brawl arises, and a wasp brushes against it as it staggers into flight, the butterfly floats forth again lightly beneath the boughs, striking its white spots and bands of crimson athwart the sun, and merging into the shadows with its mantle of softer black.

The orchard in September seems the very haunt of the fruitfulness of the season, not only because it is here that the year's last harvest ripens, but because the stillness of the autumn sunshine and shadows is here most fully expressed. In such a place, when the September sunlight is constant beyond the boughs, and the only sounds are the occasional fall of an apple, the resonant buzz of a wasp in its hollowed fruit shell, or the rustle of the red admiral's wing, the sense of each passing hour can be lost, and even the coming of night seems a far-off and indifferent event. But into the ten-fold peace of some of the western orchards there sweeps at fixed times, with extraordinary force of contrast, the stir of the restless sea. The great tides that fill the Wye and Severn drive fiercely up the tributary creeks upon their shores, and make the pulse of the ocean felt far among the inland farms and gardens. Through the hours when the tide in the distant river is low, the brook that runs beside the orchard flows with the peace of an inland stream, though its banks are wet and high, and it is fringed here and there with drift from the outer sea. The sunlight in the orchard falls unbroken, no wind comes near the boughs, and the

butterflies still float among the aisles. But the hour comes when the brook's channel is filled by a rush of brown water round the bend ; and a salt scent floats into the shadows, from the emblem of all unrest.

BIRDS' seasons for silence and song do not coincide completely with the general course of the year's increase and decay. As the days grow shorter in early autumn, the earth is cleared of its harvests, and the dense foliage of later summer begins to yield steadily and unmistakably to the onset of deadening winter. But, by the time when the first elm-boughs are touched with gold, and the mists strike cold at evening by the river-side, the song of the birds shows an increase rather than a decline; and, although the numbers of the autumn singers are comparatively few, and the whole volume of their song but small, this resumption of the music which they lost in the heats of July brings a strange underlying contradiction, a note of hope, to the pageant of the declining year.

The end of each bird's song-time is marked by few ears in comparison with those which welcomed its beginning; and, amid the abounding fullness of flower and insect life in July, the familiar singers of the garden fall, almost unnoticed, into the silence of their moulting-time. Even for those who study birds closely, it needs careful vigilance to fix the exact day on which each bird is heard for the last time. But, even if we have been conscious in July, while the blossoms opened on the limes,

of the first morning when the thrush called no more from their crown, we hear the first fitful and uncertain resumption of its song in some cool noon-day of September with a new anticipation of spring which not all the sense of autumn can destroy. It is the same with the autumn song of the robin, which begins, as a rule, its period of summer silence earlier than the thrush. The impression of melancholy when the robin sings among summer's last roses is a fallacy of unobservant minds. In actual fact, the robin is now singing its first songs of reviving vigour and defiance, after some weeks' silence during the height of the summer heats. If there is an added note of pathos in its voice, as compared with spring, this is assuredly not due to any infection of melancholy from the autumn scene, but to the fact that the bird is not yet fired by the full impulse of spring.

Even birds of the same species vary a good deal in the time at which they abandon and resume their song. The time of silence, which marks, as it were, midwinter in their calendar, comes for some even before midsummer; while the wood-pigeons which remain in our gardens do not cease their cooing until the onset of the October rains and gales. But the song of many birds, from the nightingale downwards, does not last even till the longest day; and after the first week in July, we count the singers, and find them daily fewer. As a rule, the last song-thrush stops singing before the middle of July; the notes of the blackcaps and garden warblers die away to broken soliloquies,

as of birds speaking in their sleep, and hardly outlast the thrush. One of the latest and most persistent singers is the ever alert and sprightly goldfinch, which has, happily, shown distinct signs of regaining its lost ground during the last few years as a consequence of effective legal protection. Throughout July, and even up to the middle of August, the bright though not exceedingly musical phrases of the goldfinch can be heard repeated with much of the true spring vivacity among the dense foliage of the outer branches. There it loves to search and flutter, like a noisier willow-wren, and there it often places its nest among the outmost sprays. But the goldfinch is still too uncommon in many English districts to be conspicuous as a singer in the general silence.

The first notes of the new season of song are generally to be heard from our garden robins. The robin seems sensitive to the earliest waft of misty autumn coolness that breathes through the dog-day air ; and he acclaims its invigorating power, and its hint of spring to come, by the resumption of his clear and piercing chant. The new song of the robin may not force itself upon our notice until some fresh morning in September, after rain and wind in the night, when plums and apples lie scattered among the grass, or even until the October leaves of the Virginian creeper lie drifted under the robin's perch on the railing, redder than his own red breast. But often, in early August by wood or river-side, if we wake in the grey of dawn, we may hear the song of the robin already uplifted

to challenge the keener touch of autumn in the air that is often perceptible at the very beginning of the month, when the nights have already been gaining for five weeks upon the day. By the time that the human world is astir, strong summer seems to reign unmenaced over the land; but the voice of the robin in the dawn has marked for the senses that heard it a new moment in the revolving year. Deep in the heart of summer, the seeds of autumn are already maturing change; and we learn from such phases of nature to see how no stage of life is stable and complete, but how each conceals, a little below the surface, the preparation for its own eclipse.

It is generally in the last fortnight of September that the opening notes may be heard of the most persistent of the autumn and winter singers. The voice of the song-thrush is first heard fairly freely in the south of England about the middle of October. From that time onward it may be heard singing in mild weather with little less than its full spring vigour, until in February it fully welcomes the birth of the new season, which it has indomitably foretold. In September it regains its song, not with the immediate fullness of the robin, but in low and halting notes, which have often only elements of resemblance to the freedom and sweetness of its perfect music. The song-thrush seems to need the yellowing of the elms to mature its notes, just as the sight of the cocked hay in the meadows is believed by country people to crack the voice of the cuckoo. While the September

elm-crowns are still heavy with the green of later summer, or only flecked here and there with a single golden bough, the song of the thrushes comes harshly and uncertainly from their depths. But when the great trees, which even at their first April budding bore a duller verdure than most others, flame forth at last into the most splendid shades of amber, orange, and gold, the song-thrush lifts his voice under the pale-blue November sky as if winter already were past. It is only the loneliness of his song that distinguishes it from the music of spring. For in autumn and winter there are seldom more than two or three singing thrushes within earshot in the landscape, where in March and April there may be too many to tell apart; and except for the fluting and clucking of starlings in twos and threes about the tree-tops, there is seldom other music to be heard among the loftier boughs.

It is this isolation of the autumn singers that adds much clearness and attraction to their song. Though the woodlark sings persistently from an early season of spring, comparatively few ears then learn to recognize the exceedingly rich and resourceful melody of this local bird. But its notes may be heard again under the paling gleams of a September or October sky; and then they can hardly escape the attention of the most unlearned or uncritical of listeners. The song is both richer and more sustained than that of the skylark, though it has hardly the remarkable individuality which is given to the skylark's music by its silvery sweet-

ness and the height from which it is poured. The woodlark also sings on the wing; but it mounts in wavering circles, and floats with an air of careless indifference instead of springing at once into the air and into song, and soaring high into heaven. It also sings perched upon a tree, or even a telegraph wire; while much of the peculiar attraction of the skylark's melody is due to its being almost always uttered in mid-air, although rarely the bird will also sing from some heather-tuft upon the common, or large clod in the bare March ploughs. Unbroken and impetuous as is the skylark's music while it lasts, the amazing song-flights seldom occupy more than three minutes from earth to earth; but the woodlark's easier song may be poured out much longer without a break, and is hardly less continuous. It combines the silvery quality of the skylark with a touch of the deeper and softer tones of the blackbird or blackcap. But its most distinctive feature is that rare *crescendo* on a single repeated note, which is characteristic of no other British bird except the nightingale.

Of the few other birds which occasionally resume their song as early as the beginning or middle of September, the chiff-chaff is the only summer migrant. First to be heard among the boughs of naked spring, it is never wholly silent till it leaves us in October for the south. Its comrade, the willow-wren, may also be heard drowsily whispering its song in the July woods; but it less often sustains even the echo of it until the last days before its departure in September. The

ringing song of the chaffinches is also occasionally to be heard in September, on days when the mingled warmth and freshness in the air seem to stir a sense of April in their blood. But autumn chaffinch-songs are much rarer than autumn primroses, and even the birds which call in the September garden with the native music of spring are seldom heard again till the lengthening days of February. More familiar and characteristic of warm autumn weather, after the in-gathering of the harvest, is the gentle music of the linnets, that now traverse the country in their free winter flocks. After the corn is carried, and before the land is cleaned and sown, parties of these gentle finches are a constant feature of the landscape in any country of large arable lands. They spend much time in searching the stubbles and root-fields for the seeds of the cornfield weeds on which at this time of the year they chiefly live. But the quest for a living is easy in these golden autumn days, when the dun stubbles sleep for leagues beneath the sun; and, when the linnets come to one of the tall, straggling hedges of the cornlands, where their kind will nest in mid-April, they love to halt in the upper boughs of the thorns and clematis-wreathed hazels, and to utter a little murmuring song of peace, of which the united volume fills the spaces of still autumn sunshine. Of all the birds' autumn music, there is none that realizes so fully the sense of the completed year, which is expressed to the eye by the landscape of wide, reaped fields. Now, as always, nature is dying and being born; and,

while the smoke of the weed-fires ascends through the autumn mists, the buds and catkins of the coming summer are already moulded upon the tree. It is the truth of nature's resurgence which is proclaimed in the keen voices of the robin and the thrush. The emulous instincts of spring already burn fitfully within them, and they will sing on of what their spirit foreshadows until it is fully come. But there is also an inevitable sense of parting in autumn; a memory dwells before us, in the golden stubble-fields beneath the sky, of the changeful succession of an English summer outworn, and all the stamp of the one individual year. This sense of retrospection and fulfilment, present in all the quiet autumn landscape, seems to find audible expression from nature in the linnets' murmuring song. It is purely an echo of what is past, and will fade into winter silence before the pack breaks up for spring, and each singer is again a warrior and lover.

EVEN in those soft and fertile hollows where summer seems always to be preserved beyond its normal term, the trees begin to show clear signs of autumn decay in the week that sees the end of the harvest moon. The frost or the heavier dews of the lengthening October nights make the withering leaf-stems an easier prey each morning to the sunshine or the autumn winds ; and each morning, on the grey-beaded grass of the lawn, we can see how the earth-worms are already busy at their winter work of curling up the dead leaves into crumpled cylinders, and drawing them down into the mould to which their substance returns. Though there are certain kinds of trees which are generally the first to shed their leaves, the earliest decay seems to be rather due to disease or weakness than to represent a regular and settled stage in nature's annual progress. Few of the earliest leaves to fall go through the full succession of brilliant autumn hues ; they drop from the bough in parched and brittle inanition, like foliage scorched in a fire, or like the soot-choked leaves of London elms or planes. In many cases it is the pinch of summer drought which strips the leaves from the trees in this sombre and premature fall. Yet

when once the weaklings have been thus disposed of, the greater number of the elms, as well as the beeches, oaks, and ashes in the surrounding woodland landscape, keep their foliage untouched by autumn reds and golds for eight or nine weeks longer, and still preserve the deep green of the August boughs under October and November skies. By an unforeseen turn in nature's mood, the cooler temperatures of September give their foliage a new lease of life.

As little is accurately known of the causes which govern the date of the leaf's fall in autumn as of the precise interaction of the forces of sunshine, moisture, and frost which make the autumn splendours of some woodlands or isolated clumps of trees so much more brilliant in certain years. In some autumns the elm-crowns which face our windows from the garden's edge merely seem to be clothed one week and bare the next, without our noticing more of the change than we usually see of the departure of the cuckoo or the nightingale. But in another year, the same high crowns will delight the eye day after day through almost the whole of November, burning out their life-blood, as it seems, under the pale blue of the skies of St. Martin's summer, in a splendour of amber and orange and soot-flecked gold. Yet we are still as little able to foretell either the moment or the manner of the stripping of the autumn elms as we could predict the oncoming or the intensity of an Atlantic cyclone in the youth of meteorology. It is not, as might perhaps be expected, the foreign

species introduced into Britain which always yield the earliest to our island autumn; nor are our undoubtedly native trees by any means either the last to keep their foliage in what Americans well name "the fall," or the first to renew it in spring. It is true that one of the earliest of all trees to shed its leaves is the garden horse-chestnut; and this, being a native of South-eastern Europe, might naturally be supposed to resent the damp cold of our October nights. But the horse-chestnut is also one of the earliest trees to break into April green; the uplifting of those delicate palmate leaflets, packed close to the central stalk when they emerge from the glutinous bud, seems to set the final stamp on the first day of quickening sunshine in late March. Yet the same Southern sensitiveness which apparently makes the horse-chestnut shrink from the chills of autumn should also make it respond but with tardiness and suspicion to the fitful advances of an English spring. The larch is another foreigner, but a native either of high latitudes, as in Norway, or high altitudes, as in Switzerland or other parts of Central Europe; it may therefore be considered not too forward by breaking out into its delicate and beautiful mist of green at that magical time in the second week of April, when, in a year of normal mildness, all nature seems alive and moving. But our native ashes are among the latest of all trees on our list; spring is almost summer by the time when their leaf is seen. The alder, too, is very late in unfolding the glossy quills of its opening leaves, though it

is a true native ; nor is the beech either so forward as the elm in spring or so tenacious of its glowing foliage under the autumn suns and rains. Yet the beech is almost as certainly a native as the elm is a foreigner, though naturalized in very early times. The rounder wych-elm, which is an undoubted native, is among the dullest-hued of our trees, both in the flaming weeks of autumn and when the new leaves shoot in spring. Its own characteristic beauty is revealed in winter, when its rather uninteresting foliage no longer hides the delicate grace and balance of its branching stems.

The colours of our English trees in autumn make, on the whole, a much less vivid and conspicuous display than is to be seen during October and early November among the forests of Canada and the United States. The English climate has a hatred of extremes which seems to stamp itself on the foliage matured by its woods. Brilliant and beautiful as is often the beechwood in its scarlet and orange, or the crimson column of the wild cherry at the copse's edge, there is something more deeply in sympathy with English scenery about the deep, mouldering russets of the November oak-crowns. No brightness of the autumn sunshine can quite kindle it into living flame, though it glows on steadfastly and strongly long after the more fugitive glories of the beech have been stripped by the late October gales. There are no scarlets in the English woods so unfailingly brilliant as those of the American oaks, nor even any yellows so

profuse and constant as those of the Norwegian maples. Even when transplanted to our own more temperate skies, these oaks and maples remain true to acquired habit, and set a splash of colour in the midst of the trees of park or garden which shines out amidst its surroundings like the glow of an October field-fire in a windy nightfall. Yet the primitive appetite for pure colour, which everyone more or less consciously possesses, could hardly require a fuller satisfaction than it can find in English woodlands, and along English hedgerows, when the right moment is chosen in autumn's gradual decline, and the sun shines in limpid October brilliance through an atmosphere washed clear by rain.

The richest of all displays of autumn foliage in Britain is that of a great wood of beeches such as is a feature of nearly every landscape on the chalk hills of Berkshire, Buckinghamshire, and Oxfordshire, and on limestone soils elsewhere. The beeches assume so many different shades of yellow and red, ranging from a clear, deep crimson, through orange, to cream-colour and lemon yellow, that there is no need of any other kind of tree to give variety to the hues of the picture. The third week in October is the usual time when the brilliance of the beeches is the greatest, just as the third week of May can be awaited with fair confidence as the date when they display most fully the exquisite silky green of their unfurling leaves. The high hillside beech-woods then outroll such a splendour of flame that they seem to give a new keenness

and brilliance to the hues of all other trees within sight, urging them, as it were, into an achievement greater than their own. There is a characteristic type of landscape on the slopes of many of the chalk-down ranges, in which the white pits and hollows of the soil make an austere and striking contrast of colour with the dark foliage of yews and junipers, and the cool, grey-backed leaves of the guelder-rose and its kindred whitebeam, that love this soil. This contrast of black, white, and grey has always a great individuality and a Puritan beauty; but it needs just the final touch of colour from the interspersed beech-boughs in October to relieve its coldness and to vivify its strong, clear tones. The splendour of autumn foliage is never so complete and satisfying as when it is set off in this way by some dark neighbouring mass.

Just as the beech finds its foil in the sylvan yews or pines, the flame-topped elm makes one of the most beautiful of all autumn pictures when its boughs overshadow the spacious rickyard of some Berkshire or Wiltshire farmstead, with its long black wooden barns. The elm is always a less sylvan tree than the beech; it clings more closely to the fields and homes of men, and is never seen in finer or more stately growth than where the cloud-like fullness of its vast upper boughs overshadows some hamlet or sheltered farm. Brittle both in root and bough it inevitably involves some slight risk to life or property when its boughs stretch directly above the building or pathways

of a farm. Yet the fall of a bough or bole is very rare in proportion to the frequency with which the elm is planted about dwellings in the south of England ; and year by year the beauty of its tints of charred yellow and glowing orange and amber illuminates the homestead and its surroundings with all the splendours of the turbulent autumn sunsets, that burn so low and near to earth with the same fierce tones of soot and flame.

When, on a day of autumn wildness, the dark shade beneath a tall avenue of close-set elms is thick with flying gold, or all the scarlet and orange of a bank of hillside beeches is whipped and flung abroad by the lash of the Atlantic rain, there is a strange sense of a prodigal wastefulness in nature, and of a spirit of destruction that seems wholly opposed to the slow, maturing patience that is characteristic of her rule. To see the leaves of the long spring and summer, that were nursed to birth and to full verdure at such pains of sunshine and fostering shower, now stripped and wasted abroad in the passion of a single hour, is almost like witnessing the sack of some imperial city by barbarians of the North. The wildness of such an hour brings a kind of intoxication to the blood. Yet, in reality, the fall of the autumn leaf, whether it comes tumultuously in the gale of a single night or is completed gradually and slowly in calm and equable decay, is no mere blind aberration of destructive violence, but simply one stage in the continual progress of life. The leaves of the old year fall, because the young buds of the new

spring are already thrusting them from their places. On many kinds of trees the new buds can be plainly seen as soon as they are disembarrassed of the old leaves ; but it is true of all that they thrust the old leaves away by the development of their own more vigorous life, and that the storms and frosts of autumn are no more than their auxiliaries. The falling of the leaf, in spite of all its accessories of ruin and decay, is the first event of spring. The more deeply the life of the English seasons is studied, the more plainly it is seen how there is no dead low-water mark between one year and the next. In spring and summer the tide may seem indeed to be strongly rising, and in autumn and winter to ebb ; but the forces of growth and decay are always at work side by side. Long before the hazel-covers of April are breaking into leaf, the snowdrops among their mossy roots have already passed their own time of flowering, and have sunk once more into rest. It is the leafing of the beeches and ashes in the bluebell-wood which cuts off the vivifying sunlight from the rich flower carpet beneath their boughs, and thus ends spring for the flowers at the time when the leaves aloft first feel it. So, too, the visible decay of autumn is underlain on all sides by processes of reconstruction and growth. Through the tumultuous darkness of the October night the groaning elms fling free the ruin of their summer verdure and shake bared arms against the flying moon. But before morning comes, already the worms and the rain are mingling the leaves with the mould, which their substance thus enriches for

the sustenance of other leaves to come; and high above, through all the intricate tracery of the naked boughs the germs of the young year's foliage are facing the open sky in readiness for the breath of spring.

THE year fades to its end through a series of calm reflections of summer interspersed in the autumn storms and gloom. Not only the frequency of a spell of bright warm weather about the middle of October, but the new wealth of colour, makes us welcome the approach of St. Luke's Day as a time of promise. The Atlantic cyclones, which regularly break up the calmer weather of September with tumultuous gales and rain, leave intervals of exhausted violence in which the sky is swept clear of cloud, and the sun shines on a world unruffled by the lightest air. Such halcyon days are wont to follow the passage of a cyclone in all the stormier months, but at no other season in the winter half of the year is the whole of nature lit up with such a glory of colour on wood and moor, and still decked by such a profusion of rich and splendid blossom.

On calm days of October sunshine, especially if there have been no frosts severe enough to blacken the garden flowers, nature seems to have gained, not lost, by the passage of summer into autumn. The dull, bronzed monotony of the foliage of late summer has suddenly changed into an infinitely varied display of splendid hues. Walks and leafy corners in garden or woodland, which in late July and August had become almost wearisome to the

eye, and oppressive with sultry heat and aggressive insects, are now transformed with new splendours of colour, and filled with a fresh and cleaner air. A single hanging bough newly washed with gold, or a single stem of bracken-fronds flaming by the margin of the wood, will alter the whole appearance of its surroundings, and delight the eye with the beauty and completeness of the change. Often the flowers of August and September fill the garden beds and borders through many days of October with a lavish brightness which seems hardly lessened by decay. Many walls are still thickly hung with roses, which will not all have vanished when St. Martin's Summer tinges the elm-tops with a frailer and more ethereal brightness a month later. In many gardens the tall dahlias still stand unstricken, and the heliotrope is unblackened by the frost ; and it is not till that ill-fated morning when we rise and see the dahlias hanging in limp and oozy corruption that the stroke of autumn seems truly to have fallen in the garden world.

The wild flowers of St. Luke's Summer are fewer and less vigorous than those of the garden ; among our wild British flora there is no such vigorous natural outburst in late August and September as fills the tended garden with its stateliest and almost its brightest display. Yet there is a deep and characteristic charm about the last unexpected survivors of the summer flowering-time in the pastures, commons, and lanes ; the last rose of summer is not more beautiful in the garden than the last harebell or foxglove on the rocky bank

beneath the flame-tinged wood. Some of the many wild flowers which can be found still rarely blooming in the Summer of St. Luke are simply the last stragglers of the kinds which normally bloom in August or September. In this class fall the yellow toadflax or wild snapdragon, and the heather which still deeply flushes many moorlands with its rusting bloom. In other cases the late autumn blooming of wild flowers seems due to that curious recrudescence of vernal strength under the fresher autumn skies which can also be seen in the life of birds.

Such autumn blooming is especially common when prolonged and severe drought has dwarfed and checked the development of the flowers of midsummer. In such a year the poppy will blossom thickly by the hurdles of the autumn sheep-folds, and the chicory widen its blue petals to paler skies than those of its own July. But even in more normal seasons many plants seem to gain a fresh lease of life in October, and put forth new flowers of spring before the swiftly coming end. The honeysuckle often blooms freely in September and October, though it can generally be found in flower somewhere in the shade at all times after its first blossoming in June. On feeble lateral stems, the foxglove throws up small clusters of its purple-spotted throats, far out-topped by the dry, capsuled column of its July bloom. Most persistent among autumn-flowering plants is the primrose, which, in sheltered places, is often found even in September uncurling its small new leaves and opening young

blossoms on short and tender stems. In mild winters, and in a soft southern or western climate, this autumn blossoming of the primrose will not be entirely checked before the regular time of its spring bloom in the following year. This flowering of the primrose has all the character of the beginning of the new season of bloom, and is not merely such a fitful aftermath of summer as the October blossoming of the foxglove, and of the meadowsweet and purple loosestrife among the rank autumnal grasses of the stream-side. Probably there is no month when the wild primrose is not blooming somewhere in the British Isles. In August, among the deer-grass and heather by a Hebridean trout-loch, the last blossom of the wind-beaten island spring may still be found, tarnished and half faded, among the leaves grown coarse and long; and in September, if not in the dewy mornings at the end of August, the first blossoms of the new season's growth expand among the little leaves, curled like a drake's tail, in some mossy corner of a Sussex hazel-copse.

But the most splendid of all displays which the wild flowers spread beneath the clear October sun is found on the moorlands, commons, and cliff-slopes, where the purple of the slowly fading heather is mingled with the gold of the autumn-blooming furze. The furze which is at the height of its bloom in early October is a different species from the larger and more conspicuous kind, of which the flowering season is in spring. It is a dwarf by the side of the other, few of its sprays rising more than three feet

from the ground ; its spiny foliage, too, is of a distinctly yellower green than that of the larger whin, which stands out with the bluer tinge of a bough of Scotch fir, where it occurs, as it often does, among the smaller species. The flowers of both are golden ; but those of the dwarf furze are of a yellower gold than those of the common gorse, which more closely suggest the " good red gold " of the ancient ballads. Splendid, indeed, is the royal mantle of purple and gold with which the heather-blossom and the low-growing autumn furze-bloom clothe many an October hillside in our wilder and uncultivated lands. The duller stars of the ling have already lost most of their colour ; but the deep purple of the bell-heather is more lasting, and survives to contrast its own rich summer stain with the autumn bronzes and yellows of the dying bracken on many a high moorside and sea-washed cliff-face under the pale blue skies of St. Luke.

The keenest interest of the wandering majority of birds at this season is in the berries. The blackberry, which alone of wild autumn berries is much appreciated for food by civilized man, is seldom touched by birds, which for apples, cherries, and almost all garden fruit show tastes too much like our own. If blackberries lasted as long as hips and haws or holly-berries, possibly the birds would be glad of them during the pinch of later winter ; but birds seldom look at the blackberry, amid all the plenteous fare which October offers them. Robins and blackbirds occasionally pick them in dry weather, and they are known to be eaten by

some wild ducks. Best loved of all berries by the birds are the translucent ruby clusters of the rowan or mountain-ash, which make but thin fare for human beings of the present generation, though they seem to have been acceptable to our ancestors. It is amusing to watch the raids of a vagrant October flock of missel-thrushes on any well-berried mountain-ash which stands within sight of the house windows. At once shy and more daring than the smaller song-thrushes, the missel-thrushes fill the garden, so long as the berries last, with perpetual flights and sallies, swift and stealthy on-rushes, harsh alarm notes from tree-top watch towers, and all the tumult and confusion of wings in rout. The berries of the mealy guelder-rose, or wayfaring tree, and of the wirier water-guelder are hardly less appreciated than those of the rowan ; but they are less large and numerous, and are therefore not made the object of such vigorous raids. In spite of the widespread belief that an abundance of berries in autumn foretells a hard winter, neither reason nor experience can trace any such connexion. The abundance or scarcity of berries in any autumn is an effect of the weather which is past, and in no way a prognostication of that to come. We can divine nothing of the weather which awaits the birds and ourselves in the coming winter from any indication supplied by rowan-berry, or rose-haw, or sloe.

Roaming in search of food over wider or narrower extents of land and sea, as the character of the season impels them, the birds bring an underlying

spirit of disquiet into the windless splendour of the sun-bathed and flame-caught woodlands, and speak of the imminent change. It is the sense of transitoriness in the beauty of such an October landscape which gives it the supreme touch of charm. To-day the boughs hang golden in the wood, the stain of the heather is rich upon the moor, and all the scene is enfolded in security by the fullness of a summer sun. Yet we know that when the next storm roars up from the sea, or the frost strikes down from a sky of bitter grey, the sun will shine forth again on a changed and barer world.

St. Martin's Day falls often in the midst of a spell of warm, light airs, and of that delicately brilliant sunshine which rests like a tranquil memory of bygone summer over the last splendours of the year. In years when the slow change of the autumn foliage finds the elms at the beginning of November still scarcely clouded with yellow, the mists of the next ten days turn the green of every bough to orange and gold. As the white mist of the chill November morning thins and takes wing from the well-known hedgerows and lanes, there seems something strange and magical in this sudden splendour wrought by a few declining days, as the high crowns and billowy outlines of the branches stand forward into the bright yet tender Martinmas sun. On the slopes at the foot of the hills in many southern counties, where the elms are grouped so numerously as to hide every other tree, the

middle air seems peopled with the majesty of the wide-flung boughs, turning to the sunlight in full autumnal glow against the pale blue sky, or tinged here and there by the lingering mist that dwells in the unleaved crowns as if in shells of gold. For, as the leaves grow thin, it is usually those on the fringes of the outmost twigs which are the last to fall; so that, even after the full body of each tree's foliage is gone, its outline is preserved in the tremulous and parting mists with the soft luminousness of sand-hills under the moon.

The splendour of the yellow elms eclipses for a time in mid-November the beauty of all other trees. While the elm boughs are bursting into flame, the deeper orange and crimson of the beeches are already fading and thinning on their boughs; and the smouldering russet of the oaks cannot compete with the brilliance of the elms, though it offers a sober and splendid background to their fire, and will still be glowing on when all but the last casual survivors of the elm leaves have fallen to decay. Yet in a landscape of rich and varied timber no moment of the year—except perhaps some warm week in later April when the buds are opening most freely—can display our familiar trees in so many different stages of their leaf. Here and there a stubborn oak is seen with its foliage scarcely changed from its uniform dark green of the August heats; only on a close inspection can the grain of the leaf be seen to be coarsened and hard, while their strong dark green is faintly but unmistakably suffused with the bronze-brown of incipient decay.

When snow falls and lies in November, it is strange to see the oak-crowns standing in full summer green over fields of January whiteness. Other trees, especially the wych-elms in the lanes and pastures, and the limes and horse-chestnuts by the garden bounds are already almost as naked as under the February rains ; their aspect of bareness is not diminished by the half-score of discoloured leaves which cling here and there to the extreme point of some spray. Between the two extremes of the green and full-leaved oak and the naked garden-limes come a hundred gradations of bareness, and the variety of many a hundred hues. Behind the strong, full shape of the golden elm-crown, the dark and interlacing lines of the half stripped plane or walnut boughs contrast with a doubled charm, and greet the eye with their tracery which the summer verdure has hidden. Day by day, in a mingled woodland landscape, the different trees seem actually to stand forward or fall back before the eye, as their shapes are caught suddenly by the moment of flame, only to fade again into the obscurity of naked boughs.

Among the ranked elms in the lane or by the field-side, where the splendour of the time is greatest, it is the fewness and frailty of the elements making so marvellous a picture of warmth and brilliance that presently makes the deepest impression on the mind. The trees are ablaze with a colour beside which the brightness of summer was dim ; the sun shines unclouded in a sky of exquisite blue, and the air is full, in the heart of the soft noon hours, of

the music of the song-thrush singing in the midst of the gold. Yet this whole world of beauty may be banished, to return no more till the cycle of a whole year is completed, by a single night of storm. Bright as is the sunshine for a few hours, it streams aslant from a path so low in the heavens that a mounting earth-fog can eclipse it swiftly and without warning; brilliantly as all the foliage gleams, it depends for its continuance upon the absolute calmness of the skies. Even the flood of music, that seems at first to fill the air with all the fullness of spring, is the song of a single bird, or of two chanting in rivalry over the voidness of the autumn fields. Instead of the abundant flowers which filled these fields and hedge-banks in summer, there is only the pale shimmer of the mayweed blossoms on the land waiting for the plough, or some lonely thistle-head which sets a last stain of dying purple against the brown stems and bleaching grasses of the pasture-side. When we see how scanty are the remnants of true summer vitality, and how ephemeral is the tenure of this brilliance, the fascination of the sunlit landscape is enhanced by the sense of an ethereal and almost gossamer-like delicacy. The splendour of the broad-limbed elms is scarcely more substantial than the thin mists of noon, which give a softer tinge to the sunshine on their burnished crowns; and where the sapling poplars show a crest of stainless yellow over naked boughs, their colour seems to float above the earth like a flame that trembles to expire.

In the heart of all the brilliance of St. Martin's

Summer there is an ever-present consciousness of the ebbing tide of life, and of nature still shrinking and crumbling. This gives a touch to the sunshine wholly different from the hard brilliance of a fine day in naked March, or even in the faint, expectant readiness of clear weather after the New Year. Even the last lingering blossoms seem to speak of decay and winter rather than of summer and life; for they too must vanish in corruption before the year's tide turns and the sap mounts upwards for the spring. The rank herbage of every hedge-side is still full of soft decaying verdure in stem and spray; dim and faded as is the hue of this vegetation, we see how its aspect is wholly different from that of the withered browns and greys of the down-beaten litter of early spring. There are a hundred little differences in the wild life of the fields; when the caw of the rooks breaks on the ear towards sunset we see, for instance, how they are not busily clamouring round their nest-trees, nor even paying the rookery a casual visit of investigation, as they will very early in the year, but are streaming high overhead to the deep woods, often far from their spring nesting-places, where they roost in their great autumn flocks. But stronger than all such cumulative signs is the universal sense that the earth is still cumbered everywhere with the bygone summer's ruin, which the forces of decay have not yet had time to absorb. The year is dying, but not yet dead; and until the perfect midwinter stillness is come, though the song-thrush sing with never so sanguine a throat,

the woodland scents of dank but fragrant corruption are on the air, and it breathes no sense of spring.

Yet, in spite of this general decline, there are always a few signs in nature, even as early as mid-November, of the stirrings of the new wave of life. One of these anticipations of spring is the renewed song of the thrushes; and even before the thrushes began to sing the robins were trilling once more in the early autumn gardens. By this time in November the starlings have taken up their quaint, loquacious notes, and pipe and chatter in the elm-boughs or on the housetops whenever the morning shows a promise of blue sky and a bright and sunlit air. It is only the promise of sunshine that they need: for they can be heard discoursing music in their characteristically conversational manner when a white morning fog still densely enfolds the earth, and the bough or roof on which they sit is invisible in the cloud. So long as there is that whiter light immediately overhead which proclaims a clear sky above, the starlings will take post and sing. Very early on such dense November mornings they may sometimes be heard clucking and babbling in half-tones near our bedroom windows, while the fog is scarcely tinged with dawn. At such times, when the Stygian gloom and chill seem to set even the thought of spring infinitely far away, it is very curious to hear the starling imitating some characteristic spring notes, such as the plover's, though five or six months must have passed since he heard it

last. The guttural but unmistakable reproduction brings back from the very antipodes of the year the picture of the broad wings tumbling and tossing above the grassy nesting-ground, and all the heartening tumult of the April days. The starling reproduces the call of spring in the tone of a miniature phonograph, and glides forthwith into a medley of his own queer, musical jargon. But the spring seems to be brought nearer for a moment by his repetition of such a special call than by all the music of the song-thrush, which he pours out now and in spring alike.

Man's own recollections of spring, as he traverses the fields and hillsides under St. Martin's sun, come chiefly by force of contrast. Where the grey-backed fieldfares from overseas make a winter clamour in the branches of the red-hawed thorn upon the down, the vision comes up before us of the same bush tufted in April with newborn green, or foaming in early June on all its boughs with the blossom that poured fragrance down the dancing hillside air. Such a contrast in the aspect of a single bush seems to sunder the spring from this present moment of the year by a far greater gulf of time than we feel when away from the fields; and it is the spectacle of winter change in such a concrete form that gives most force to the temptation to regard the autumnal period of decay as a time when nature is fraught with unhappiness and the world is ill at ease. As the days shorten and the cold increases, there is a natural and primitive tendency in man to regard the earth itself as sharing

in human dissatisfaction at the change; and this picturesque superstition has received perpetuation and support from a hundred images of poetry. Yet we gain a far deeper pleasure from watching outdoor life if, instead of attributing our own regrets at the decline of autumn to nature, which does not feel them, we endeavour to realize how equable and untroubled is the passage of every season, and how the processes of decline are as interesting and as beautiful as those of growth. Deeply as we may perceive the year's decay underlying the warmth and brightness of the St. Martin's sunshine, the consciousness of its ebbing forces need bring no sense of sadness at the downfall of another summer. The evening comes as wholesomely and as naturally as the morning; and all the decay of autumn is as welcome and propitious to the earth as the vigour of spring.

THE wet leaf dropping in the autumn thicket is a signal of the turning seasons that is always full of promise, and brings new hope to the cloudiest year. In years when the passage of a cheerless summer leaves few regrets, there is a double attraction in watching the earth's redemption of its outworn verdure, and the steady reabsorption of falling leaves and dying herbage into the material of harvests to come. Before our eyes the waste of the bygone summer is repaired, and the foliage of a new June made ready by the dissolving vapours and rain ; for the dampness of the English autumn is one great cause of the deep verdure of the English spring. Even by the New Year, the winter damps and the worms that thrive in moist soil have so far done their work that of the innumerable leaves which drive on the autumn winds almost all are matted into smooth drifts and layers, and already merging into decay. The increasing light of January sees the woodlands orderly and at rest. When the spring growth stirs in the soil it finds the earth's store fully replenished for its nurture ; and the shooting verdure is but little encumbered by the refuse of older seasons, which in drier climates remains to blemish spring. Above all, the green turf, which is nature's most distinctive gift to these

islands, owes its elastic richness to the dissolving mists and rains ; and in the isles and hills of the west, where autumnal moisture and mildness prevail through most of the year, it reaches its most bountiful development in the growth and renewal of the peat.

Besides the quiet work of decay, the land is cleared for next year's seed-bed by the rain-fed autumn streams. The floods of autumn help to rid the land of the year's wreckage, just as the gardener and farmer have learnt to clean their ground in preparation for the winter frosts. When the rivers fill with the first autumn rains they bear down in their clouded waters the litter of a hundred copses and hillsides, and bring back the picture of many bygone weeks of summer to the eye that watches the shallows where they strike the light. Besides wisps of stained reeds and seed-heads of sedge from their own banks, the travelling waters roll fragments of blossom and autumnal vegetation from remote and contrasted tributaries. Yellow bracken fronds and light-cut rowan leaves come drifting from distant moors, with purple bubbles of the heather-bloom. When we see, far down the valleys, these waifs from other scenes, it is easy to understand how the autumn floods become the distributors of strange seeds to distant places, and how quickly a plant which once establishes itself by the water-side, like the American *mimulus*, will colonize the whole length of a stream. The distribution of plants by a river may often be very noticeable when it passes through distinct types of

landscape in the space of a few miles. Among tracts of wood and pasture such cornfield weeds as the marigold and spotted dead-nettle can be found clinging to a gravelly island or lodged in the niche of a rock ; and typical plants of the mountains may follow the torrents into the lowlands, though they are absent below their normal limits at a distance of a few hundred yards from the bank. Seeds may be thus successfully transported at any time of the year when they are ripe. But the great moment for distribution is at the time of the autumn floods, which gather up the whole produce of the summer and lodge their burden on many high-water marks, out of the reach of the ordinary flow. The presence of many live seeds in the drift brought down by autumn and winter floods is shown in another way by the fondness of some seed-eating birds, particularly the titlark and lesser redpoll, for hunting in the litter strewn along the high-water mark of the streams. The wildness of autumn winds and rain is no mere frenzy of destruction ; beneath the darkening ruin the earth is steadily looking forward to her spring.

The rains of autumn not only enrich the soil by the quick dissolution of stems and leaves as they lie, but by washing the silt and drift of the rivers into layers of special fertility. No soil is richer than the beds of ancient alluvium which border many lakes and streams ; and in barren and mountainous landscapes there is a tract of comparative verdure wherever the current of ancient torrents has been checked and diffused in its flow.

Yet, though the completion of the torrent's work of erosion brings fertility welcome to man, it is by no means equally convenient for him when the disturbance is too often renewed. The restlessness of the autumn rivers is seldom more strikingly seen than in mountain valleys where the green meadows are perpetually being scarped and channelled anew by the shifting bed of the stream. The whole floor of the valley consists of layers of soil and half-rounded pebbles, which are laid bare in every steep bank. But in every spate the river resumes its work of reshaping its ancient material by cutting deeper into the meadow at each concave bend, and leaving a wider flat of shingle exposed in a convex curve on the other shore. Just as the whole area of Britain is actually increasing as the result of coast erosion, so the extent of land in such river valleys at least becomes no less under the perpetual fret of the streams. But in both cases the water gives a very unsatisfactory exchange for what it takes away. In the ages since the soil of the meadows was spread by the primeval floods it has slowly gained a covering of fertile loam, perpetually deepened by the vegetation of countless summers. It is land on which cattle will grow fat. But the new shingle on the convex beaches is barely flecked with coarse brushwood and scanty weeds, and years must pass before it will feed even a wandering goat. When the floods of a single winter are seen to have mined away a strip of four or five feet from the meadow, it is strange to reflect how endlessly the river must

have carved and remoulded the soil since it first began to flow. The splash of a new turf-fall into the dark swirl under the bank seems a note that has been echoing for ages.

When, after long summer idleness, the river of a wide landscape once more comes striding down its channel in the autumn rains, the whole of nature seems to gain new purpose and power. A summer flood is most often purely sinister; it is worse than a great landslip or a fire to see the hay-cocks circling in the meadows or the sheaves obscurely rolling in the pools. Hardly less dismal is the sight of the harvest prolonged into ruin under the rains of a hopeless autumn, with uncut barley blackening in November and the green sprouts thick as a grass lawn in the heads of the rotting shocks. But in years when a good harvest is safely carried and the weed-fires have burnt out in the fields, there is the strength of fulfilment in the smell of the ocean rain, and the cluck of the brown water lapping higher hour by hour on the beaches where the adders lay. Then the river becomes the master of the landscape; it draws into its own strong eddies the streams that brim from a hundred hills and pastures, and the downpour of the groaning sky. That old sense returns of the personal life of rivers which made them gods or demons to early man, and survived in romance and ballad when most other forms of early animism had died away. Of all the objects of nature, only the sea is so readily invested with a conscious life by those who dwell long in the open as rivers and their natal springs;

and, while the sea's is one and universal, there is its own aspect and temper in every stream. The river springs visibly into life when it sweeps down with sustained and directed purpose under the autumn rains. The flood-crest tearing round the bend, with a tree's limb tossed before it, is one of the most moving of all natural scenes. It is this phase in the life of the river which made it natural for ancient peoples to regard it in the image of a beast in its onrush. To Mediterranean peoples the river-god was horned and voiced like a bull, while in Scotland, Wales, and Ireland the word for the wild boar in the old languages is still the name of many mountain torrents. Once thus personified, the river-god might smile, or bring gifts, or woo, though more commonly he slept; but the root of his nature was the fierceness of the flooded stream. In Homer's story of how the river-god Scamander fought against Achilles as he slaughtered the Trojans in his bed, it was the choking of his clear channels with human bodies that first stirred his wonder and resentment; but, once awakened, he arose for battle as the traditional stream in flood. Elsewhere there is a sense of ambush, yet more sinister to man, about the slow current of deeper streams; so, in the grim Northumbrian lines, when Tweed chides Till for his stillness, Till answers back that for "ae man ye droon, I droon twa."

Yet in spite of the occasional menace of the swollen flood, the replenishment of the streams and pools in autumn is the visible promise of fertility in the year to come. Only a profuse rainfall

in autumn and winter can charge with moisture the deeper veins of the land, so that the springs gush full and clear through all the summer-time, and the fullest verdure luxuriates in the hollows and by the pools. With very few exceptions, the live creatures that withdraw most swiftly before the autumn storms and fogs are precisely those which are most dependent upon them for their future satisfaction. The lizards of our sunny heaths are the true salamanders, athirst for a longer summer and fiercer noons than England can give; the great eft of southern gorges, with the yellow guinea-spots, is as much a lover of dankness as the toad. But, except for the lizards and a few other rare or inconspicuous creatures, the abundant moisture of England, with the consequent profusion of plant and insect life, is a requisite for the existence of most of the lovers of mild airs and sun. When autumn descends, each has its own way of facing it. Many creatures of very different constitution lie hid in sleep. Snails creep into the crannies of the garden-wall behind the apricot branches, and seal themselves with a tissue of slime until the spring sun strikes through the stone. Those butterflies which pass the winter in the winged state creep into the same kind of crannies and into many other hiding-places among dead brushwood or the roots of heather. Hedgehogs find their refuge among deep, dry leaves; and the bat hibernates in towers and tree-trunks, though it is stirred uneasily by tides of warmth to flit in the winter day. The bird-like bat shows its real animal affi-

nities by remaining to hibernate in England; among all the tribes of the summer insect-eaters and their prey, only the birds follow the sun to the south, though for many centuries they were believed to hibernate like the rest. While the creatures of summer slumber, or are far away, the mists and rain-storms revive the fountains of life and provide the needs of the coming year.

While these creatures are compelled by the storms of autumn to seek refuge in flight or torpor, in the bosom of the rivers themselves there is a quickening of kindred life. Unlike the coarse fish, which spawn in summer, the mating time of the trout and salmon begins with the autumn floods. When the water laps higher at the mossy wall, and the birch sheds its yellow leaves, the rising stream becomes the pathway of the strong fish pressing upward, from the sea or the lower waters, to the gravel-beds on the distant shallows. Even in small mountain streams, the trout in wet Septembers may be found pushing up the flooded tributary torrents in their passion for travel against the stream. They can often be recognized as migrants by their greater silveriness, or darkness, than the general hue of the stream in which they are found, and of the native troutlets which accord with it. Even the smallest trout of the hill-streams has the spirit of a fighting-cock under its scarlet spots that mimic the hanging rowan-berries. The freshness of the rains and the tumult of the autumn waters seem to have passed into the game blood of the trout and its greater brother, and to kindle a response in them each year.

A still stranger impulse of migration than that of the salmon is alive on stormy autumn nights in the current of the flooded stream. It is then, most of all, that the eels throng downwards on that mysterious journey of which the goal has only lately been discovered in the deep seas, after the absence of all knowledge of their breeding habits had given free play for ages to the most fantastic popular beliefs. Such nights seem to close an era of time, and to bring earth and heaven into fusion, for the world to be born again. In the autumn storm there is a stirring even of the slime to its mother; and from their lairs in the slough the eels return to the sea.

WHILE nature is still busy ripening her seeds, she sets about sowing them. In the artificial life of a garden most plants and flower-heads are removed or destroyed before they seed, so that the show of blossom is often greater at the end of a fine September than at any previous moment of the year. It is the same, to a lesser extent, in the meadows and fields. But in all waste and uncultivated ground, where the processes of nature have been little hastened or modified by man, there is no such wealth of blossom and verdure as lingers in autumn gardens and pastures, and no such clearing of the soil as quickly follows the corn harvest. The vegetation of all the year lies heaped and withered in its place. Primrose leaves, grown rank and ragged, still sprawl in the hollow ditch-sides; and the tall grasses of midsummer stand in whitish tussocks, among which the large autumn spiders sling their cables from stem to stem.

All down the long green lane, rich with bloom from the time of the first primroses in March to the opening of the last convolvulus in the September shadows, seeds now shine or rustle in every thicket or tangle. Seeds enclosed in bright berries, like those of the mountain-ash and wild rose and woody nightshade, are gay and conspicuous to the

eye. Plumed seeds, like those of the thistle and wild clematis, lend a delicate brightness to the sere tones of autumn vegetation. Yet, in spite of these conspicuous exceptions, few English seeds are brightly coloured. Their interest lies less on the surface than that of their parent flowers. The eye ranges over the herbage of the brookside, where the white heads of the meadow-sweet tossed together in the windy July nights, and sees only a mass of stained foliage and blackish sprays. The eclipse of the white and yellow bedstraw blossoms is even more complete; they might well have vanished in the wind, like the foam they resembled; and where beds of blue cranesbill lit up the grass, we must search long in the rusty weeds before we can find one birdlike beak.

Yet in curious and secret ways these seeds are full of motion and activity, and attract the keen attention of eyes more vigilant than our own. The wood-mice, or long-tailed field-mice, which in spring and summer attack bulbs and flowers in gardens, in autumn turn their attention to the seeds of the copses and hedgerows. Little would be seen of the work of these shy nocturnal creatures if it were not for their habit of making heaps of seeds and berries in old birds' nests. On the rough slope under the wood, where the purple knapweed rose among the thyme in August, and the trill of the cirl buntings fell persistently from the neighbouring elms, there is now no tinge of blossom, and the birds with their summer cry are gone. But their nest in the bed of brambles, from which the young birds

flew in June, is filled with the thistle-like seed-heads of the knapweed, which the mice have felled and carried in the dry September nights. All the heads are more or less torn and fretted by the mouse's teeth; but these little creatures are as wasteful as they are tireless, and always seem to spoil more than they eat. The seeds of the clematis, which ripen in October, are the most abundant of their dainties in the chalk or limestone regions where the plant is common, but many other seeds and berries make up these dense, mixed heaps. The stones of hawthorn and whitebeam berries have the fleshy fruit stripped off, and the kernel extracted through a small round hole. Unlike dormice, which often curl up and go to sleep in a new bird's nest, when they discover it on their travels in spring, the wood-mice seem never to use these nests as sleeping-chambers, but simply as dining rooms and storehouses. The dormouse's store of hazelnuts is usually hidden in or near its winter nest, which is placed in some dry hollow on the ground, and not in the twigs where it spends the summer. But the dormouse grows fat for his slumbers chiefly by feeding on hazelnuts in the nights and duller days of mid-autumn. Beneath the hazel-boughs in the hollow Berkshire lanes, the dry ditches are thickly strewn with nutshells of many different years, each drilled almost as neatly, on a larger scale, as the delicate perforations of the wood-mice in the seeds of a rose-hip or a hawthorn-stone.

Mice and squirrels probably aid in the autumn work of distributing seeds and berries, by burying

them and then forgetting them. But they seldom store their harvests very far away from the shelter of the boughs that bore them; and many other agents do more to scatter the seed. The easiest for the human eye to follow is the wind. From early August the thistle-seeds go floating far and wide across the landscape, wandering over bays and rivers, and flurrying into the draughts round city cornices and chimneys. In the lanes in calm September weather, when no wind blows strong enough to lift the seed and launch it across the hedge-top, the downy masses swell day by day among the thistle-heads, as if growing larger and lighter by some internal fermentation. The individual globe of thistle-down is perfectly adapted for travelling long distances. Rayed on all sides with stiff yet elastic threads, it has a wonderful faculty of eluding the grip of all but the most tenacious snares and casting itself free again upon the breeze. Its remarkable capacity for travel can be well observed on a range of lofty hills. When the wind blows freshly, then the globe of down springs actively aloft; when it falls to a gentle zephyr, it descends to earth, and moves in light leaps from tuft to tuft of fern and creeping bilberry, or rolls slowly onwards like a ball. Where the ground breaks away into a precipitous rift, it seems as though it must inevitably be lost in the abyss. But such gorges are the channels of swift upward currents; and the thistle-down no sooner begins to fall gently towards the crags of the raven, where it could find no spot suitable for its growth,

than it leaps up in the invisible stream of air, and safely crosses the gap.

Every few minutes a thistle-seed from fields far below will come mounting the crest of the ridge, and falling gradually with the air-current on the further slope ; it is fascinating to see the precision with which this apparently helpless sport of the winds will part from its native fields, and search out a new seed-ground on other pastures beyond the mountain wall. The parachute-like seed of the dandelion and many kindred plants is equally well fitted for long flights through the open, though less able to thrust itself free on every side from snares and obstructions. The twisted membranous wings of ash and sycamore seeds send them fluttering with a screw-like motion to a point clear of the shadow of the parent tree, though they can attempt no distant flights ; and as the flowers of the wych-elm are fertilized by the winds of March, so the disc-like seeds are thickly strewn abroad, in the time of their own ripeness, by the gusts of May.

Another great class of seeds depend for their distribution on living transport. All through the late summer and autumn, burrs and hooked seeds of many shapes and sizes are waiting to attach themselves to the coats of wandering animals. Even as early as May the green seeds and clinging stalks of goose-grass begin to lap themselves about man or dog in the copses ; and the butcher-bird, which builds at that time of the year, has learnt to wreath the clinging stems into its nest. As the plant withers in July the stems lose much of

their power to cling ; but the rough, round seeds only become tougher as they dry, and last until the following year. The yellow agrimony, which raises its starry spears in July and August among the chequered shadows, sheds abundant conical seeds, capped with fine hooked hairs. Herb bennet, which bears a larger yellow blossom like a garden geum, has a cluster of tapering seeds, each ending in one hook of ample size. Grass seeds fix themselves firmly with their sharp awns, often toothed like the beak of a prawn. But the plant that gives most trouble to a wandering dog, and will wreath the head of a straying sheep, like a dumb Ophelia, is the stout and branching burdock. The burrs of this great rhubarb-leaved plant have exceptional powers of adhesion. Once they have well penetrated a wild animal's coat, it may be weeks or months before it sheds the last hooked fragments on distant soil. If left to wither on the plant, in normal seasons the burrs will slowly break up under the winter frosts and rains, and let fall the seeds in time to shoot in spring. In wet autumns the burr itself may be seen shooting green, like the shocks in the desolate oatfields, forestalling its season.

Birds play a very important part in the distribution of autumn seeds, and not only of the wild or cultivated berries, which are eagerly devoured by thrushes and many smaller species. Seeds of wild plants such as the yew and elder and mountain-ash, as well as the raspberries and currants of the garden, are often let fall in lofty places,

scarcely accessible except to winged creatures. Dwarf yews lock their woody roots into crevices of church-towers, and the holly reveals its evergreen foliage in winter on the crown of the pollard ash. But all these chance sowings are excelled in interest by the deliberate operations of the rooks. They have the instinct for hiding food that is developed in their relative the magpie to a passion for concealing any attractive object; and they carry acorns in autumn to a distance of half a mile or more from the oaks, and bury them in the soil. The buried acorns are constantly forgotten, and in due time germinate and give rise to little sapling oaks. More often than not these die before they reach a foot in height; for the bare downs and peaty moors to which the rooks are specially fond of flying with acorns are by no means favourable for the growth of oaks. The crests of many tall downs are seen littered throughout the year with the shreds of autumn acorns; for, though rooks devour many acorns among the trees, they often carry them to open ground to eat, as well as to bury. So their great cousins, the ravens, choose some bold crag on which to dismember and devour such prey as they can carry away. Rooks will sometimes carry off and bury potatoes in the same way as acorns, and the young plants duly shoot in strange and unpromising situations. Jays, and probably magpies also, have the same trick of hiding fruits and seeds. Although the great majority of these ill-placed plants must perish, a certain proportion belonging to native species are probably established

in new situations by these birds. Walnut shells are often found strewn on the crests of the downs among the acorn shreds; but these are split too cleanly for the rooks' rough, though powerful bills, and have probably been dropped by roaming boys. They, too, hunt from copse to hedgerow for autumn seeds and berries, like the squirrels and thrushes; but human intelligence works with a deadlier grasp, and few of the nuts and blackberries which they gather escape to shoot in new soil.

The holly berries which shine in winter sunlight form for certain kinds of birds the last reserve of food in hard weather; and many years may pass before the clack of the fieldfares and the harsh chiding of the missel-thrushes are mingled in the boughs of the garden hollies under the loom of the snow-laden sky. The wrangling of their hungry flocks so near our houses is one of the sounds of a bitter winter. Not all berries are ripe for the birds at the same time of the year; and even of those that are ready together, some seem so much less attractive than others that they long outlast them, to form later and sparer feasts. There is also a great difference in the birds' preferences. Softer and more luscious berries, including raspberries, currants, and other garden fruits, are appreciated by many species that could not digest the emergency rations of holly and hawthorn. Currants especially seem to betray many birds otherwise blameless in the gardener's eyes; and

the reputations of the blackcap, the willow-wren, and even the robin are largely cloaked by the obscurity in which the worn and moulting plumage of the old birds and the confusing phases of the young enable them to move at that time of year.

In autumn, when the willow-wrens and other summer birds of passage have gone, but before the fieldfares come, the ripening of the berries of many wild flowering shrubs brings a luxurious feast-time to our own resident birds. With so abundant a store before them, they begin by devouring the berries with the softest and juiciest pulp; nor is there anything improvident in their greed, for these soft fruits are the first to be destroyed by cold weather. From late in September until early in November the cream of the year's wild harvest is skimmed by the blackbirds, missel-thrushes, song-thrushes, and many smaller birds. Walking in the dark shade of the yews, we hear missel-thrushes flitting and fighting in the upper branches for the sweet red cups of jelly that enclose the green seeds. By the flaming hedge-rows, the ruby clusters of the guelder rose vanish almost as quickly as the larger and brighter bunches that weigh down the sprays of the mountain-ash. Even the heavy clusters of the elder grow swiftly lighter while the leaves are falling; and when the last pale spray has vanished, the twigs point once more to the sky.

The first fieldfares arriving in November fall straight to work upon the hawthorn berries, when they seek a change from feeding in the open pastures. Birds seem to care little for blackberries while

the elders and rowans are still laden ; and by the time that the softer fruits are over, blackberries, too, are so withered that they tempt them less. Man has thus almost the full use of this wild crop, although he is often so hard pressed by birds for the enjoyment of his garden fruit. Last of all the softer berries come those of the mistletoe, which completes the paradox of its growth by ripening in winter. These, too, are often found stripped when the mistletoe bush is cut for Christmas ; and there is little doubt that the missel, or mistletoe, thrush is their chief assailant. But mistletoe berries are by no means the missel-thrush's main food ; and its name is a proof of the interest which gathered in early times round every association of the bough. The common local name of screech-thrush is much more descriptive of the bird's habits, but it has remained a provincialism.

Thrushes, blackbirds, and their kindred feed upon berries for the sake of their pulp ; but another large class of birds are attracted by their kernels or hard seeds. While the missel-thrushes are wrangling over the sweet cups of the yew berries in the autumn thickets, great tits and several kinds of finches search persistently for the hard, inner shells among the boughs and on the ground beneath. The repeated hammering of the great tit, as he breaks the kernels of the hawthorn, yew, white-beam, or hornbeam with his bill upon a bough, is one of the commonest sounds in the stillness of the autumn woods. Strong as is the great tit's bill, it is not quite strong enough to break the hardened

shells of those little nuts without repeated blows ; it reaches here the limit of its powers. Perfect provision for securing this form of diet is found in some of the finches. The conical bill of the common sparrow is the most familiar example of a bill of the seed-crushing type ; but the sparrow is framed for feeding on small seeds and grains, and its bill is not very highly developed. In the greenfinch it reaches full proportions ; while in the hawfinch it is exaggerated to a degree which would be positively grotesque if it were not so exactly designed to a definite and serviceable end. Size against size, for a hawfinch to crack a plumstone is almost as if a man could crack a coco-nut in his teeth ; and it is small wonder that the hawfinch's head and bill are almost monstrous to enable it to practise daily, and as a matter of course, so disproportionate a feat. The boldly mottled plumage of the hawfinch, as well as its massive bill and neck, make it one of the most remarkable in appearance of all small birds ; and its steady increase of late years has added interest to the bird-life of many districts, though it is not welcomed by gardeners.

Hawfinches are fond of cherry-kernels, and hunt beneath the trees of a cherry orchard for the fallen stones, like the tits and greenfinches beneath the woodland yews. They are also accused of attacking ripe cherries for the kernels, just as blackbirds and starlings do for the pulp. This charge does not seem to have been fully proved ; but it is certain that, like jays, they can clear off a crop of green

peas in a garden with almost stupefying speed and thoroughness, if once they turn their attention to it. On the other hand, they pick up large quantities of caterpillars when they have young, in spite of the apparent awkwardness of their beak for this more delicate task ; and it mainly depends on their local habits whether the net result of their year's work is beneficial or harmful.

Unfortunately there is hardly room for doubt in the case of their cousins the bullfinches. The beak of the bullfinch is hooked and fashioned delicately, for all its power ; it is turned to subtle use of picking and pulling, as well as to sheer crushing. It is the bullfinch more than any other bird which shells out the close-packed seeds from the red rose-hips hanging in the winter hedges ; and in the same way it attacks the buds of many garden fruit trees for the sake, apparently, of the tender heart. Examination of the crops of many birds in Kent has shown that this only is the part consumed ; and there is no proof that the bullfinch tears fruit-buds in search of grubs hidden within them, as is urged in defence of the great tit. Once the autumn feast on the soft berries is over, the thrushes and their kindred mainly feed on worms, snails, or insects, except when hard frost compels them to take to the hawthorn and holly boughs. But finches are not formed to hunt in fields for worms, or in ditches for snails ; and when the bullfinch has ripped out all the last of the old year's crop of rose-hips, it turns in early spring to the buds in the fruit gardens. It is one significant illus-

tration of the change which high cultivation brings to the habits of many birds, that some of their most mischievous ways seem accidents or casual vices, and not habits corresponding to their structure. Assuredly the hawfinch did not acquire his powerful bill by shelling out green peas ; nor does the task of picking pear-buds to pieces, which a tomtit can do very well, account for the peculiar combination of strength and delicacy in the bullfinch's black beak.

At midwinter, when the pinch of frost is felt most often and most keenly, the dwindling store of food begins to be reinforced by the ripening ivy berries. The ivy does not bloom until October, when the richest wild berries are ripe ; and although its berry is juiceless and dry, it is preferred in hard weather by most of the thrushes and their kin to those of the hawthorn or holly. Ivy berries ripen slowly, and are often not fully swollen and blackened until a mild season begins to melt into spring. But in colder weather they are the first berries to be seized when the frost binds the soil and drives the birds from the open pastures and the fringes of the thickets. Even the blackbirds, which cling for the most part in winter to an animal and insect diet scraped among the fallen leaves, are easily tempted to join the noisy assemblages of misselthrushes in the ivy bushes that cloak the heads of the hawthorns and hollies in the hedges. The black berries will often be nearly gone before the red ones on the outer branches are touched. But the wood-pigeon, that almost omnivorous vegetable

feeder, is the greediest of all birds for the ivy bough. Many berries seem to be equally to the wood-pigeon's taste, whether they are ripe or unripe; perhaps when ripe they serve as fruit, and when unripe as so much softish green-stuff. Even in August the London wood-pigeons will flock to gobble the unripe berries of the whitebeam trees planted in parks and gardens; and in January the same scenes of timorous and wary greed are repeated about the ivy-crowns that overshadow the country lanes. The foot of the hedge-bank beneath is thickly sprinkled with the berries knocked off by the flappings and uneasy balancings of the great blue birds—for they look blue against the grey winter clouds, just as they are grey beneath the blue skies of summer. On the next mild night when the wood-mice stir abroad they gather the fallen berries and carry them away to their own little lairs and bivouacs in the crannies of the bank or in the angles between the ivy stem and the trunk up which it climbs. The small stones of the yew, hawthorn, or whitebeam berry, which the greenfinch crushes and the great tit breaks by hammering, are dealt with more delicately by the paws and teeth of the mouse. Through a small round hole at one end the little nocturnal creature gnaws out the kernel within.

The colours of the berried bushes, and the life of the birds that is heard or seen in their boughs, give much of its characteristic interest to the winter face of the land. The wave of blossom that fills May now brings forth an answering harvest; and

its natural purpose is completed when the berries gleam in the sunshine over a carpet of hard white snow, and the boughs are thick with small birds, ravening and wrangling. The sober attraction of such a scene lies in the sense of the hungry being fed, and of the old year's life being utilized for the creation of the new. The birds that sustain themselves in winter's cold drop the seeds where they will shoot in new places. But the brilliance of form and colour on such a snowy morning has the intensity of a child's early vision. The spectacle of half a dozen golden pheasants feeding on the orange and scarlet berries of a spindletree on a snowy hillside is unsurpassed for sheer brilliance of colour by any summer scene.

As autumn deepens into winter, the woods are cleared fitfully but surely of their last patches of bright foliage. The fallen leaves are wrapped about the base of the thickets as a cover for hedge-hogs and dormice in their winter nests, and felted by the rains into a blanket for the shoots and bulbs. The oak-tops gradually become the highest notes of colour in the landscape as the elms grow bare; and the whole winter landscape assumes a more subdued harmony under the darkening sky. The oaks smoulder until Christmas, though with the feeble glow of a dying fire; and now the bare trunks and withered undergrowth, that in summer and autumn formed the dull background of the forest landscape, stand forth with a new conspicuousness. In April the beech-boles were silver, where the young leaves opened against them; in August they were black, beneath the heavy shades; but now what catches the eye is neither the silver breadths of clean bark nor the dark rain-courses of the drainage from the upper boughs, but the greener flanks painted with wood-lichen, gleaming in the absence of summer green.

The bracken loses its orange splendour of October, and sinks to pale russet under the December skies; but as the deeper russet of the oak is shed, again the

bracken provides the brightest gleam of colour in many winter woods. Lustrous as gleam the hollies in the winter frosts, there is little of the brighter green of the deciduous trees in their hardy and burnished foliage. They seem to suck their sap from flint or adamant in the soil, and to bear leaves transmuted from metal. Their berries have a firm brilliance fit to cope with winter; and it is not until the softer autumn berries have fallen that their deep scarlet most easily catches the eye as it seeks unconsciously for some point of colour in the woodland. Far into November the green and orange and scarlet berries of the black bryony are strung among the dry nettle-rods and bracken stems, where the springing plant in its swift June growth caught for support at anything more substantial. Gradually the vines moulder, and the supports are beaten down; the last effort of the summer growths to assert themselves in the winter landscape comes to an end, and the holly berries win the prize of endurance.

After the orgy of colour under the shadow of impending death, the firm lines of the trees in midwinter strike a sense of relief and peace. Troy has gone down in flame at last, and there is stillness in the dawn on Ida. Newly stripped to the eye, the trees in their winter tracery seem stronger and more individual than in their wealth of summer foliage or in the fugitive splendours of autumn. Fine trees are finest of all in winter, when they owe least to ornament and most to proportion of structure. The columnar growth of a great elm

or beech has a grandeur under December skies which is half masked as soon as the buds begin to thicken in the tops, and our attention is distracted by insuppressible anticipations of spring.

Most fascinating of all trees in winter is the oak, with its peculiar combination of strength and fantasy of line. Oak boughs curve and cross in endless black patterns against the sky, but always preserve an essential conviction of power for all their imaginative vagaries. The main secret of their strength is that the boughs never outrun their hold upon the massive trunk, and so never get top-heavy; and this strength of grip is continued in the roots beneath the soil. The curves of the boughs are never lax, but are tense and held in hand. The strength in the oak's pattern is best seen by comparing it with that of the trees which come nearest to imitating it, such as the walnut and plane. The plane's boughs are sinuous and wandering, and often seem to have no coherence with their own beginnings; and although, as a matter of fact, planes are tough trees, and seldom shed their boughs in a gale, they have not this appearance to the eye. The pattern of a walnut tree is that of an oak, but lacking in every detail some hint of the oak's firmness. Here the deficiency is real; for the walnut only too often sheds its main boughs, and there are comparatively few perfect full-grown specimens.

But although one naked tree has more muscular perfection than another, no healthy specimen fails to gain in essential beauty by being stripped of its

leaves. Only the results of disease, or mutilation, or artificial culture, become disagreeably conspicuous by the loss of the autumn cloak. Once the solstice is past, and the light begins to gain at morning and evening, we look impatiently towards spring, and ask our trees for signs of quickening life. While the days are still dark, and the riot of autumn but lately past, their bare lines strike fresh and unfamiliar, and there is sufficient pleasure in their purely static strength. In winter, too, we learn to pay fuller attention to the bark of the trees, which is as different in every species as the boughs. Given a square foot of bark from a well-grown specimen, the observer of winter trees could name them as easily as he could from the sight of the naked boughs or the summer leaf. How the wych-elm's differs from the elm's in its lower ridges and more closely parallel furrows, or the horn-beam's from the beech's, from the appearance as of a wrestler's straining sinews beneath the skin-like rind; these and many other differences, hard to describe in words, but unmistakable to the eye as it gains in knowledge, are all part of the life of nature which is observed most easily and fully in the tranquillity of winter days, when the woods are stripped of the veils and distractions of summer.

It is the strong and temperate beauty of the bare lines of the trees which is most in accord with the grey, even days of English winter, when there is so little obvious attraction in the climate, but so wholesome a recreation. Yet in the darkest of December weather, when there is, as yet, not even

the glitter of snow and frost to give a harder brilliance to the light, the mild sunshine will sometimes break through the clouds in the heart of the day ; and then its low light strikes from the winter world a sparing brilliance of colour which is surprising in its fugitive richness. In the hillside wood, the huge trunks and smooth boughs of the beeches shine in silver over the heaps of russet bracken ; the packed larch-crowns in the covert glow to a light and ochreous red, and the ripe berries of the scattered hollies sparkle brightly over their spiny foils. Already, in the hair-like crest of the willows, whether pollard or free-growing, the heightening of the light reveals in the glossy bark a tint of kindling green ; and where the level wands of the osier-bed stand ranked in a close thicket, they burn forth with the banded crimson and orange that is the most brilliant of all midwinter displays. Such landscapes under the mild, winter sunshine have all the delicacy of a moonlight picture in the flowery woods of spring, with the added reality of the day ; and when the colours kindle to such pure and equable splendour in the fugitive noons, the mind, attuned to their winter simplicity, almost marvels at the memory of the same woods in the press of their midsummer life, as at something tropical and overpowering.

In the long December nights the bareness of the woods is betrayed by the echoing ring of the fox's bark, the brown owl's hoot, the clamour of a black-bird alarmed at roost, or the cries of the cock pheasants as they go aloft at dusk. The colder and

clearer the night, the more ringing are the echoes ; for mist checks sound as much as the summer foliage. But there are few signs of life after dark in December, and on a cold, clear night the earth is full of sleepers hiding from the wind. The east wind licks after the mounting Pleiads, and on the shoulders of the hills and in the crests of the lanes the ground is hardened with a shell of frost. Here the feet stumble in the frozen hoof-tracks and ruts ; but a few yards over the crest, and in the hollows at the bottom of the lane, they sink into the familiar softness of fallen leaves melting into mire.

In the sheltered hollows and the dense thickets of thorns and evergreens the birds take refuge at roost, and here they sleep out nearly two-thirds of the winter months, since there are sixteen hours of darkness at midwinter to eight of light. Wrens and long-tailed tits cluster under the cornices formed by overhanging roots on the lane-banks ; hedge-sparrows and robins harbour in the tangle of low hollies and brambles under shelter of the hedge, or in the ivy that creeps among its roots. Moorhens lie snug under the banks of the ponds in the pastures, planted with bushes to protect the water from the summer sun ; the same covert which hides their nests in April protects them from the winter winds and frosts. Greenfinches and chaffinches flock to evergreen thickets and garden shrubberies ; a single blow upon the garden laurels raises a bewildered stir among the birds clustered almost as thickly as the leaves. The most crowded roosting-places are those of the starlings ; at the alarm of an

unaccustomed footfall near their roost the thicket begins to murmur and thresh with the stir of shifting birds, until renewed silence lets them fall back to sleep. The volume of noise produced by the slight movement of so many birds in a confined space is impressive and almost menacing; it threatens every moment to burst into the rumble as loud as the first growlings of a thunder-peal, which a great flock of starlings can raise when they spring simultaneously into the air. But at night they will hardly break from their cover at any alarm; the thicket seethes and grinds like a shingle beach working in a storm, and lulls into the same momentary calm. The life diffused in summer through all the woods seems concentrated into a single thicket, as the sap sinks back into the roots. Individual life seems lost in this winter darkness, and merged into the primal slumber of the soil; and the moon riding high above looks on a world almost as lonely as its own.

On mild, dim nights the winter moths and one or two kindred species maintain a feeble play of life all through the dark season of the year. They are such frail and filmy creatures that winter seems a most unfit time for them to be abroad; but yet there is something typical of the reduction of active life to its narrowest limits in their very frailness. The male moths have weak and rounded wings, with characterless dusky patterns, and the females are wingless. These insects are a well-known pest of fruit trees, to the boughs of which the female climbs after emerging from a chrysalis in the soil.

Then she lays her eggs, and the "looper" or geometer caterpillars hatch and devour the bloom in spring. It is to intercept the female of this moth that sticky bands like flypapers are fastened round the trunks of the trees in well-kept fruit gardens and orchards. Notwithstanding this device, females have been found safely established above the sticky trap, with free access to the upper branches. As their wings are the barest rudimentary stumps, they obviously cannot reach the branches unassisted, if the trap is in proper working order; and the theory has been put forward that the male has developed the device of carrying his mate to the boughs in order to circumvent the peril.

It is not at all improbable that the male carried the female to the branches, since one butterfly may often be seen carrying another; but it is incredible that the male should take any voluntary step to carry the female past the trap and into the boughs. Even if there were any ground for crediting him with the least vestige of parental concern, very cogent proof would be needed before we could safely conclude that a creature so low in the scale of being as a winter moth would be capable of such an intelligent device. There can be little doubt that the moths fluttered at hazard from the tree-trunk below the trap, and landed in the boughs of the same or another tree. Probably they were aided by the wind, for the egg-laden female is a bulky burden for so slight a creature as the male winter moth.

As feeble tribes survive in deserts and jungles, so the winter moths and their kindred find a refuge in the nights of late autumn and winter from the perils of the more active seasons. If they flew in summer, the fluttering males would be an easy prey for bats; but bats in winter hunt rarely, and only by daylight. The nightjar, which feeds on moths by night, is far away; and the foes of the winter moths are reduced to such field-mice as still wander in the milder nights, and to a few moles prowling above the surface. These animals no doubt eat the creeping females when they can find them; but once they climb their tree the winter moths are safe from wild enemies. Nature, as often, has been less careful of the males; and it is no uncommon sight to see the feeble wings of the winter moths outspread on a roadside puddle, or the fresh tar coating a telegraph pole, where the wind bore them on a December or January night. After a week of south-west winds and rain there is sometimes a little drift of dead winter moths washed up on the leeward strand of ponds. This frail and delicate group of moths appears peculiarly unfitted to cope with the frosts and storms of winter, which are shunned by the stout and powerful insects which beat about our summer lights. Like phantoms of nature's sleep, they flutter from the winter loam, simulacra of forms to be.

WINTER floods restore landscapes of a wilder past. As soon as the soil is saturated to overflowing by the unusual rain, the effects of generations of careful drainage are for the time annulled, and the ancient hydrographical system of the country is restored before our curious eyes. The rivers overstride their straitened banks; and they fill once more with a turbid winter torrent the "fleets" and "oxbows" and stagnant backwaters which once served annually as short cuts and emergency channels for their swollen waters, but in days of swifter drainage have lost their use. As soon as the flood water begins to stand or flow, a thousand inequalities are revealed upon the surface of the land, which wholly escaped notice in drier years. Streams flow again down gentle dimples in the pastures, where only the longer and ranker tussocks of the grass, or the misty film that clung in the autumn evenings, gave a hint of an underground channel. Swamps long reclaimed and tilled, but still, perhaps, bearing witness of their old condition by their traditional names of "marsh," "moor," or "mere," once more betray themselves to the hilltop gaze, where the straight lines of fence and hedge cut with a heightened artificiality across

an open and shining lake. Village sliding-pools appear again by the wayside, where no child of the present generation has seen them; and in innumerable places in the lowland and stream-side meadows, and in the steep clefts of hills, the water returns to its ancient and unsuspected channels to show how powerful an influence it once exercised over the formation of the landscapes of to-day.

There is a peculiar fascination in standing on the slight rise in the modern meadows or cornfields that forms the limit of the flood, and seeing the ancient face of the land made plain once more through the veil of centuries of civilization. The very slope at our feet, which seems so unreal and casual a shore-line, is little by little seen to be no mere sudden freak of last night's winds and waters, but the ancient boundary of the marsh before it was tamed. The hedges and fences, that at other times form the cardinal features of the landscape, are now conspicuously new, and feebly superimposed on something enduring and more real. Along the slight slope on which we stand the expanse of water is embayed, as far as we can see, in grey bights and dim green headlands, where plovers and a few gale-driven seagulls have already re-peopled, as if by ancestral instinct, the shores of this dream-like sea. Following the strand for a mile or two among the dividing hedgerows, we shall probably observe how many of the farms and hamlets are built just at its margin, and fall as naturally into the restoration of the ancient land-

scape as the birds that feed along the shore. For the farms are older than the fences, and were built by the brink of the ancient marsh in days when it was seldom dry. Here and there, perhaps, an outlying farm or hamlet is surrounded by the waters, but raised above them on so slight an acclivity that until the flood came the whole spot had seemed on one dead level. Even in the greatest floods of a modern lifetime, there are comparatively few of the older cottages and farm-houses in parishes bordering our smaller streams and rivers that are ever invaded by the water. The old houses stand dryshod by the shore, though, scarcely a hundred yards away, the redbrick walls of the erections of recent builders mount guard above their washed-out cabbage-beds. A difference of eighteen inches in the elevation between one end of a modern road and the other is not likely to attract the attention of any uninstructed eye, until the day comes when the waters re-enter their own.

Readily as birds of certain kinds haunt the margin of the rising and falling flood water, they assemble in far greater numbers and variety when the wild aspect of the flooded marshes is fixed and intensified by frost. After a few days of hard weather great flocks of wild-fowl and many smaller birds begin to rove southwards and westwards over a vast area of Northern Europe; and among these myriads of birds in hungry stir, enormous numbers seek England for a temporary refuge, while many of our own birds, in like manner, drift southwards

at the same impulse of the cold. The waterfowl driven southwards into unfamiliar regions are drawn down where the glint of the frozen floodwaters shines pale on the ancient marsh. There is no time when the older aspect of low-lying tracts is brought back so vividly to modern senses as when the cries and subdued chatter of the wildfowl are heard from the frozen meadows in the dusk of the afternoon, or when, on some chance noonday alarm, snipe and mallard are seen uneasily shifting above the glittering landscape. Alike to sportsman and naturalist, such spells of frost bring in a keener form the same sense of discontinuity with the normal round as the shore-line in the flooded meadows. An England is brought back of ampler and wilder nature, haunted by a more varied fauna than that of to-day.

Many former tracts of marshland are also visited for a time by marsh-loving birds on their regular migrations in spring and autumn. Even where the bygone marsh has been drained, banked, and fenced, and cultivated as pasture and tillage, the migrating marsh birds will often still halt upon it and appear to make trial of its capacity, so long as there is any vestige left, in wetness of soil or reedy and secret channel, of the ancient character of the spot. Golden plover appear in April in the wet fields of many hillside farms, and vanish again after a few hours or days, on finding how the land is scored with fences, trampled by grazing cattle, and overrun by the restless menace of man. In the water meadows of the southern counties, where

a highly elaborate system of cultivation turns to good account the primal wetness of the river valleys, the clear, wild call of the redshank is mingled sometimes in April with the familiar nesting-tumult of the lapwing and the drumming of the scarcer snipe. The snipe still nests in such lowland places, where once it was abundant and in recent years has begun once more to increase. But the redshank is less tolerant of man's ways than the lapwing, and less resourceful in concealment than the snipe. It seldom gains confidence to settle for the season in the open meadows to which it clings with evident desire, sometimes for many days. Its presence adds a novel and rich attraction to the spring life of the brilliant water-meadows. The white feathers in its wings outspread for flight make it as conspicuous to the eye as its liquid alarm notes to the ear. Even in these early days of the nesting season, it is a restless and a noisy bird, though its changing April calls are as nothing to the din which it raises round the head of the wanderer who strays near its hidden young in its eventual nesting-place a few weeks later. The birds begin to pair when they reach the oozy places where they wish to linger. From day to day the party which at first took flight together may be seen breaking up into couples and settling a little apart upon the meadows. The eye is caught from afar by the whiteness of the cock bird's opened wings as he paces before the hen and lifts them above her in the gestures of redshank courtship. But in most agricultural parts of the country the arrival of such unfamiliar

and conspicuous birds brings upon them more interference than they can bear. The snipe may drum on until May, and the lapwings shriek and tumble in their pleasant madness of the nesting season until the lanky young are grown ; but the morning soon comes when the clear cry and the white-patched wings are found no more in the water meadows, and the redshanks have gone forth by night to some wider and lonelier tract of marshy land.

The small patches of untouched fenland which survive here and there in different parts of England preserve a deeply characteristic picture of bygone English scenery. They generally occur at the edge of some wide reclaimed tract of pasture land, or as a relic of the primal wilderness where reclamation has been carried forward from two or three different sides, but has stopped just short of completion. Some of these lingering tracts of fen may also have been left alone because they originally formed the lowest and wettest portions of the whole of the marsh ; but it is a curious fact that in some cases the level of the sedgy waste is now higher than that of the surrounding meadows. This is due to the shrinking of the spongy soil of the meadows in course of time, under the constant system of drainage, while the fen is still untapped. Its surface is irregularly divided between dense beds of sedge and reed in the wetter and lower tracts, and islets of slightly higher ground where the sedges cease and bushes of willow and hawthorn are rooted in the soft black soil.

At all times of the year the life of these surviving fenlands is in striking contrast to that of the newer world outside. In hard winter weather, when all the wilderness of russet sedge-drifts is tagged with brittle ice-crusts and sprinkled with foggy rime, there is a sullen grandeur in the profound inertia of the landscape. Even when April is passing into May, and the meadows and copses of regenerated soil are full of quick life and fruitful promise, there are still but few signs of awakening from winter desolation on the faded face of the fen. The verdure of spring comes late to all water-sides and oozy places; and, except for the occasional fire of the kingcup in the open swamp, or the golden boughs of the sallow vividly gleaming on the loamy islets, there are few of the year's new leaves and blossoms until May is far advanced. Then, when the boughs of the lonely hawthorn shine white with blossom far across the levels, the saturated earth, at last warmed by the increasing sun of spring, teems into profusion of life. The pale green spears of the reed shoot dense among the dry, down-beaten canes; by midsummer they are bowing from green to grey under the stroke of the wind. Green bur-reeds and sceptred golden iris make a dense undergrowth round the hidden pools, where the turquoise forget-me-not lays an even cloak across the ooze, and the huge leaves of the water-dock unfurl above the tepid water. Still wholly given over to wild native life, the fen is as remote in its July luxuriance from the landscapes of the surrounding countryside as in the depth

of its lethargy that lasts from October until May.

In its lurking-places for beast and bird, and its wealth of wild, unprofitable plants which culture has elsewhere eradicated, such a tract of ancient fen provides a rare asylum for many forms of life which grow rarer and rarer on the tended soil. Among the moths which shimmer beside the reed-pools in the twilight of the late June evenings are some, now almost extinct, which once abounded in the fenland wildernesses, when the plants on which they depend were widely distributed through the land. The swallowtail, which divides with the purple emperor of the oak forests the pre-eminence among British butterflies, is now seen only in a few marsh and river-side districts, where the food of the caterpillar still lingers. But in earlier days it was perhaps as abundant in England as the white butterfly of modern cabbage-gardens was rare.

The dense reed-beds and wet, waste feeding-grounds are still the refuge of many of our scarcer breeding birds, though of lost British species most were marsh-birds too large and wild to brook the restriction of their haunts. The lesser redpoll, smallest of our finches, often breeds in the shrubby islets of the fen, though, unlike the true marsh-birds, it is by no means incapable of prospering in the nesting season elsewhere. Its small and shapely nest, thick felted with willow-silk and the seed-down torn from bulrush-heads, is one of the most distinctive of their treasures. The dense beds of reed form the favourite haunt of the shy and seldom-

seen water-rail. Each spring the strange clamour of "brook-runner," as it is sometimes called by countrymen who are still familiar with it, can be heard from the depths of the sedge. On the wet and stubbly ooze, in the twilight of the new-grown reed-beds, the rough nest is heaped together out of pallid reed-blades of the previous year. The eggs with their pale buff ground and spots of faded purple are a puny copy of the corncrake's. Only very rarely is a glimpse to be caught of the slim shape, darker than the corncrake's, which is the familiar spirit of the fen. The natural secretiveness of the water-rail is to some extent its protection; for it is the birds which nature has never taught either to hide from man or to adapt their ways to his which from age to age fight the losing battle of extinction.

Agriculture has waged almost equal warfare on the plants of the heath and of the marsh. But the draining of a morass makes, as a rule, a more sweeping change in plant life than the gradual reclamation of a heath or hill; and the broom and heather and juniper have vanished less completely from many tracts where they once prevailed than the marsh plants from their former home. Yet there are many upland districts where even the common ling—by far the most generally distributed of the various species of heather—is to-day an unknown plant over long stretches of country; and one may travel for almost as many miles on a midsummer day without catching the glint of the flowering

broom. Where the soil is passably fertile and its contours so gentle that its whole surface has been long brought under cultivation, all such waste harvests were eradicated long ago. The weeds which have partly taken their place are of the kinds which find harbourage in meadows and corn-fields, and are mostly of annual growth. But in many parishes where this transformation is almost complete, there remain a few square yards of ground in which the old habit of the earth can still be traced. Sometimes it lingers on some abruptly dropping hillside, too steep, or too thinly covered with soil, to be ploughed with the rest of the field; and sometimes a cart track across a former common was left untouched when the land on either side was enclosed. In such slight and casual refuges nature still preserves a remnant of the old heath flowers; the ling draws the larks to nest by the level cart-rut, and the broom-bush hangs bright in June from the stones upon the hill. Sometimes these isolated patches of sharper soil form outposts of the more mountainous types of vegetation. Then the eye of the wanderer is struck by a little clump of white-stemmed birches, exiled, as it seems, among the fields of southern elms.

Heath and marsh plants once occupied, between them, a great part of the whole soil of the country; and many of the most characteristic species were formerly turned to common domestic uses, which have grown rarer as the plants have declined. In places where the reed is profuse enough to supply a considerable crop, it is still often used for thatching

sheds and outhouses ; and reed-thatch may also be seen capping the old "cob" or mud walls, which survive in parts of the country where there is no good supply of stone. The cane-like stems are stiffer and more durable than straw ; and for this reason they are suitable material for the screens used in brickfields, although straw is often used in their place. Reed-thatch nowadays has always an old-fashioned air ; and even straw-thatch, which ousted it as cultivation reclaimed the wild, is now seldom seen on new cottages, while the thatcher grows a rarer and rarer craftsman. The giant rush, which often grows beside the reed in pools and quiet streams, is another water-plant with the same kind of history. Its tall, slender stems are used for the seats of rush-bottomed chairs, and were turned to many other purposes in earlier times. Now, however, rush-bottomed chairs have passed out of favour with country cottagers, who consider them rude and old-fashioned ; while for exactly these reasons they are liked by many people in more sophisticated ranks of society, who think they are weary of elaboration. The rushes which were formerly used as wicks for rush-lights were not of this large kind, which grows in running water, but the common species of wet, oozy fields. This also tends always to vanish as land is properly drained ; but it is still too common for the farmer's liking, as there is no surer sign of a wet, sour soil. Rush-lights were not given up owing to any scarcity of rushes, but to the competition of factory-made dips.

Few, indeed, of the old home uses of wild plants have died out because of the scarcity of the raw material; they have perished under an urban civilization. The osier is the only marshland plant which still supports a fairly flourishing industry. British baskets were famous even in Roman times, and the word "basket" is itself of British origin, and was adopted in one form or another by both Roman and Saxon invaders. The industry which first gained British craftsmen a foreign reputation is by no means yet extinct; but it relies no longer on the wild willows of the marsh, but has adopted improved varieties and a careful system of cultivation. Ropes are still twisted out of heather-stems in the Hebrides; and the broom plant has bequeathed its name without change or disguise to the implement which is now constructed of other materials. Generations must have passed since branches of the broom-plant went out of general use for sweeping floors; but rough brooms, consisting of a few broom-sprays tied together with a string, may still be seen now and then about cottages in rural Wales. The memory of the old device has not died out, even if its use is no longer regular. Heather-brooms are less unfamiliar; while the birch-broom shows no sign of dying out of use in gardens. The race and calling of the Surrey and Hampshire broom-squires are not yet extinct, although they are gradually vanishing as a distinct element in the population of the moorland parishes. Carts laden high with a parti-coloured load of fresh, white-handled birch-brooms and new hay-rakes were

lately to be seen making their way from the heaths on the Hampshire border into Berkshire. They cross the Kennet with its planted osier-beds and remnants of old fen, and pass into the deep green country of the Thames valley, to sell their wares where the landscape changes and the birch becomes a rare tree.

WINTER landscapes hold many corners which give shelter to plants and birds in the colder weather, and foster the earliest spring. Many plants in deep lanes and wayside hollows do not entirely cease their growth like those in the wind-swept fields and woodlands around them. Primrose and foxglove plants keep a cluster of small green leaves at the core, which bud in the damps of autumn and never lose the tint and freshness of youth until they swell into the full foliage of spring. Their expansion is almost imperceptible for many weeks of winter, unless the weather becomes unnaturally mild; but they do not lose the ground they have gained, or succumb to any increase of cold weather, except when they have been forced into too swift development by treacherous warmth. In such spots vegetation seems not completely to lose consciousness, but to drowse through the winter in a half-stirred slumber, like the field-mouse in its own warm tangle. There is a visible promise of awakening in these young green leaves which is lacking in the ordinary winter landscapes, where it often seems that only an actual miracle can bring spring; and they gain attraction from this contrast with the frosty fields.

The number of plants which seem struggling to

attain the uninterrupted winter life of true evergreens varies with the richness of the flora in any district, as well as with the general mildness of its climate. Foxgloves are almost confined to soils of grit, gravel, or sand; and their clusters of young green leaves, nestling among the sprawling and tattered foliage of the bygone summer, are seldom found in the chalkpits, which give the shelter of a natural greenhouse to so many winter plants. Primroses will grow on many soils; and even on the level floor of woods in the Surrey and Sussex clay they find sufficient shelter among fallen boughs and tangled brambles to unfold minute leaves, and often blossoms, from autumn onwards. Tufts of nettle sprout vividly by early February among the old, bleached stems; and though their poison seems half asleep, they can feebly sting. Dog's mercury is the earliest plant to spread a vivid green carpet in the copses; in December, or even in sunny autumns, it pricks up its first dwarf tufts on sheltered banks. It often grows on the northward bank of a lane which never sees the sun, if it is sheltered by the opposite slope from cutting winds; and though its early growth in such sunless places seems surprising, it is not hard to explain. Like the other early plants, the dog's mercury is lowly of stature; and it finds the freest space for its development in places where the ground is not choked with the ruins of the previous summer, as it is on a southward slope.

In the sheltered places, where the tangle of dead stems lies thick through winter, it is sometimes

hard for spring flowers to reach air and light. The snowdrop can be found flowering in a bramble thicket as late as the March equinox, lifting its white head on a stem eight or nine inches long, in its struggle after the open sky. In the same way the earliest primroses have the shortest stems, while they grow three times as long in the green tangle of the April lanes. These early flowers are saved from the fiercer competition in the later hedgerows, which forces their successors to grow taller and taller as summer goes on. But nature is not perfect at every point; and their habituation to easier conditions makes it hard for them to find air in some sheltered situations which otherwise would suit them best. The most ingenious method of overcoming this difficulty of combining shelter with space and light is that of the stitchwort, which will presently open its white stars among the earliest bluebells. Its old stems die away into a withered tangle; but life still runs in them, and the new leaves bud from their joints, and are thus kept clear of the litter choking the soil. These grass-like tufts shooting from brown stems are one of the first signs of new life, like the leafing of the honeysuckle bines.

Pits and wayside hollows form permanent refuges in winter for some of the least migratory of our birds, such as the blackbird and hedge-sparrow. In most English woods and gardens blackbirds and song-thrushes seem to be birds of closely similar habits. But thrushes have far more of the wandering instinct, chiefly because they are less able to

secure a living in very hard weather. In some parts of Central Europe the song-thrush is only a summer visitor, while the blackbird is a resident. Blackbirds have a way of quartering themselves in winter in some warm corner full of dead leaves, where the grip of the frost is slightest, and of disinterring various forms of life which the song-thrush seems not to eat or not to discover. The hollows that foster the spring plants are among the blackbird's refuges; and where it has screamed off in exaggerated panic and left the leaves disturbed, we can sometimes see peeping among them the pallid shoots of dog's mercury or bluebell thrusting towards the light. The hedge-sparrow is as quiet as the blackbird is noisy; but it is no less constant to the brambles and soft marl-slopes of its chosen hollow. Often its last year's nest still hangs in the naked thorns—a wet and shapeless cushion, with the moss of which it was built sprouting green again after the autumn rains. In April it will build another nest not far away, with moss from the same nettle-covered bank, and twigs of the same trees—elder, or fir, or elm—that served it a year before. The pit is sufficient for it at all seasons of the year; and its constancy to this still corner of English soil gives a deeper attraction of contrast to the moment when the whitethroats returning from Africa are first heard babbling about the nettle-bed.

An unfailing refuge for many wandering birds that do not regularly leave England is a deep and well-sheltered spring. Large sources generally

lie at the foot of a protecting slope ; their waters are gathered in the mass above, and are forced out by some belt of clay at its foot. When they have washed out a deep hollow in this sheltered site, there is warm covert in the bitterest winds. The water bubbling upwards is always a little less cold than the air on frosty days ; often a wreath of thin steam hangs above it, with an added suggestion of warmth. The crusted ice on the stream-bank closes very slowly in the hardest frost upon the eye of the spring and the main channels which it feeds. The water keeps alive through winter a fresh carpet of cress and brooklime, making a vivid contrast with the parched clods and bleached grass of the fields ; and the small snails and insects of the waterways keep up an undisturbed vitality through the frost, while the minnows flicker as in summer over the bubbling sand.

Except for the grain-eating species, which waver in clouds about the stacks, most of the common winter birds of a district will feed about the margin of such a spring ; and it is a resort for scarcer settlers. Kingfishers often haunt it after they have left in autumn their breeding-places along the smaller and more exposed streams. A kingfisher will take up its post day after day on a branch of a thorn or willow overhanging the six-inch shallows where the minnows play ; from time to time it flings itself upon the water with a sharp crack, and returns to its post before swallowing the small silver fish. Now and then it can be seen hovering above the shallows in search of its

prey. If cautiously approached the kingfisher is often slow in taking alarm. It watches the stream so absorbedly that if a human figure once approaches unobserved it will tolerate a good deal of quiet movement before it skims away. The metallic blue of its back depends a good deal on light and movement for its full brilliance; and as it sits motionless upon a bough, or flies off against the glitter of ice and snow, its colour seems often obscure. Its general appearance is then russet-brown, from the predominance of the chestnut on its breast; while a feature which becomes most conspicuous is the white patch on the neck. Many people have been puzzled by this appearance of the kingfisher when seen in the high lights of a frosty landscape.

Often, however, the kingfisher's back flashes as brightly in winter by the river-head as in summer by the deeper channels; and the animation of the picture is increased by the frequent presence of one or two grey wagtails. Even in its winter plumage, the so-called grey wagtail is brightly washed with yellow; and it flirts and balances its long tail so as to make the most of its colour. The brilliance of these two birds heightens the vernal impression of the streaming water and vivid watercress beds; like the gush of the perennial fountain, they seem to defy the frost's rigorous grip, and to keep the flag of summer afloat. One or two pied wagtails are almost always seen about such a spring, and are hardly less cheerful in their attire; and in the temperate landscape and the

winter light a more vivid beauty emerges from the contrast of the grey and olive plumage of the water-hen, with its blood-red phylactery on its forehead. When the silence of a winter's morning lies on the watercress beds, sometimes the lurking water-rail will glide softly out of the bordering herbage, and dabble with its long bill in the channels. Always shy and elusive, at the sound of a footstep on the hill it will slip back like a shadow into the sedge, though the kingfisher posted in the willow does not shift a muscle of its body. All these birds are drawn to the same spot, because there alone in a wide range of landscape the elements have the mildness of spring. When true spring comes, they will scatter; and their concentration on the unfrozen hollow, and their dispersal, are as truly a form of migration as the southward journey of the sedge-warbler and its return in April to the willows.

Of all the birds seen in winter by this spring, only the pied wagtail may possibly avoid migration altogether. It may nest in a hole in one of the willows on the very spot, and prove itself a resident bird, as it is generally said to be. But all the others must migrate, even though the spring migration in the case of the water-hen may be no longer or more arduous than a trip to the reed-beds fifty yards below. The water-rail's movements are secret and hard to trace; but water-rails certainly migrate a good deal between winter and summer, as is shown by their distribution at different seasons. The kingfisher, "bird of March," will reappear on

some thread-like brook of the uplands as the equinox draws on. The grey wagtail's journey will probably be the longest of all; except in rare instances, it does not nest in its winter haunts in the south and east, but returns in earliest spring to the hill-streams of the north and west. Many pied wagtails are also wanderers. One winter refuge which they haunt almost as regularly as a perennial spring is a little sun-filled cove where a cliff-stream falls into the sea. The fascination of such a place to man is as great as its material attraction to the birds. There is a delight in the conflict of the sweet water and the salt in the debatable pool, and in the contrast of the bright trout and fringe of land-plants above, with the starfish and seaweeds washing in the tide beneath. Birds find much winter food in the wave-borne wreckage collecting in such a sea-pool, and in the weeds brought down by the stream. The wren steals down from the furze-brake on the cliff-side to pick in the fresh-water drift; and meadow pipits in twos and threes search methodically along the high-water mark. But neither of these birds finds an attraction in the stream for its own sake; it is an interruption of their interest, not its centre. Then, with their sharp, double note, a pair of pied wagtails come flitting over the rocks in the winter sunshine. They alight on the boulders in mid-stream, flirt their tails, look up to the splashing waterfall with an air of possession, and the place becomes inhabited and complete.

IN the brief and quiet days of December the life of the woods seems only half to awaken between one long night and the next, and their aspect is one of peace. The life of woodland animals and birds flows on with diminished volume. The birds are few in numbers, except, perhaps, when some vast flock of immigrant wood-pigeons settles nightly in some thick cover of firs ; and when the pheasants raise their roosting-clamour at nightfall in the boughs, it seems to echo through a naked and empty world. Complete hibernation is rare among animals in Britain, compared with the unfailing regularity of the winter sleep of many species in more rigorous climates. Yet the rustling run and shrill pipe of vole and shrew, so constantly present in the summer thickets, are now heard but seldom ; and of all the bats which peopled the summer dusk, only the common pipistrelle is sometimes seen hawking in the full light of the warmest afternoons, when a few insects can still be found abroad. The voices of the few birds now singing ring in the silence as if under an empty dome. In May the song of each thrush or blackcap is underlain by innumerable other voices ; and if we move a little away, it is quickly overridden by the notes of another singer. Even the blackbird's first bars before

dawn sound through a lonely and not an empty world. But in December the notes of a singing thrush travel far across the dim green pastures; and the robin's challenge in the oakwood rings with a sense of space among the rain-blackened boles.

So far from the earth's habitual stillness at this season being destroyed by such unwonted songs, it is emphasized. The robin's and even the thrush's notes are but a thin anticipation of their full outpouring in the spring; they recall that omnipresent music, and make us more conscious of the calm. Alone in the afternoon's greyness, the thrush sings in the bare oak-top beyond the pasture, and slips down when the light grows dull and the farmboy calls the cattle to the hay. The silence seems to become absolute when the boy has clanged the farm-gate under the dun sunset; and yet, as we listen, it is a tissue of subtle sounds. The bat pipes above us as it passes; far away in the next meadow a peewit calls once, with a cry as thin and illusory as an empty chrysalis-shell. Another film of silence detaches itself into sound; it is the water oozing in the soaked soil of the meadow under our own feet. We take a step, and can hear a wide simmering and sucking; and now when the bat comes back, its cry seems twice as loud. Then comes an intermittent pulse in the air that seems at times to fail altogether and never to become an actual sound. When we gain the lane beyond the meadow, it grows into a dog's bark at a distant house. Even now it would hardly be audible unless attention were keenly concentrated upon it; and the dog may be

barking at some distant alarm far beyond the range of human ears. Many persons with good hearing for ordinary purposes cannot hear the squeak of the bat or the distant jarring of the fern-owl on a summer night. Probably very few persons can hear the stroke of a bat's wing; and yet it must make a noise. In the calm of the midwinter fields we learn how partial and limited is our ordinary appreciation of sound, and of what an incalculable and complex murmur the fabric of our own silence must be woven. If the bark of a dog can make so distant an impression on a dull ear, the mountains must be filled with the din of far-off cities, and this silent landscape be trembling to the murmur of the sea.

Nocturnal life seems especially suited to the dark season of the year, when the sun is so nearly banished; and it is certain that many birds of diurnal species suffer greatly in hard weather from the length of the winter nights. Many birds which are most wakeful in winter are among the earliest nesters in spring; and this is probably due to the preservation of their strength by the curtailment of the long night fasts. Sparrows and other finches are essentially birds of daylight; they troop to roost when robins and hedge-sparrows still flit actively about the bushes, and their normal nesting time is nearly a month later than that of thrushes and blackbirds. In exceptionally hard seasons, when the earth is long frozen and the berries are exhausted, thrushes perish in great numbers; but in ordinary years and places they are the earliest

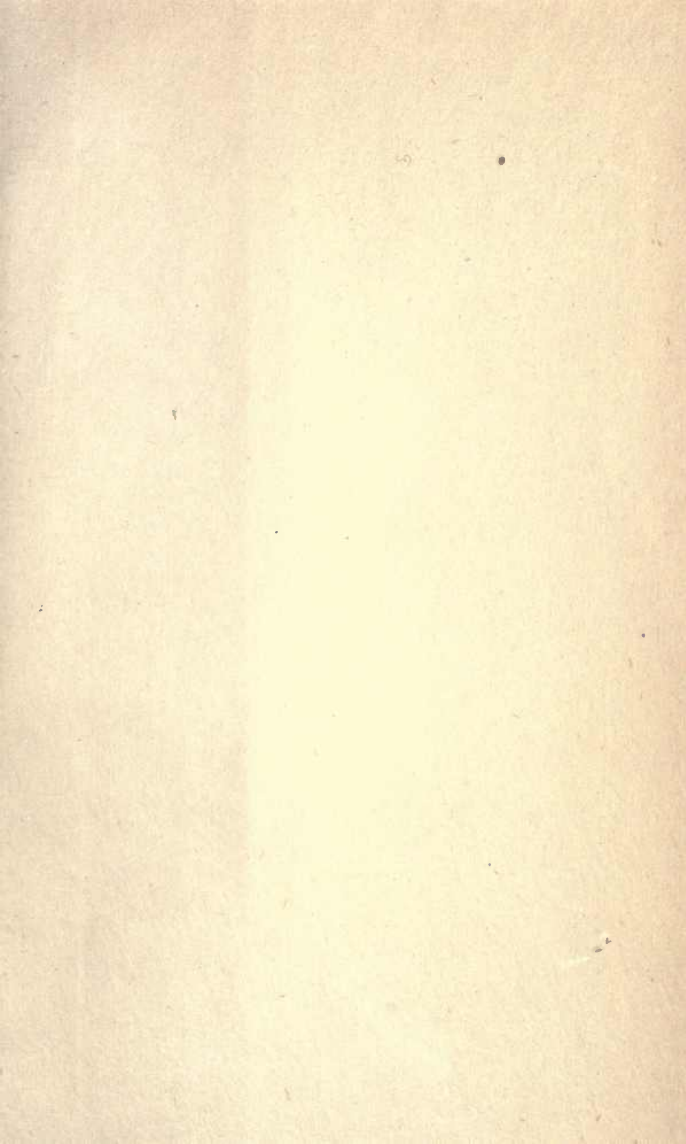
of the smaller birds to nest, and are closely followed by blackbirds and robins and hedge-sparrows. All these birds feed later into the dusk than finches or starlings ; and although in a night of nearly sixteen hours a gain of half an hour or an hour does not seem a great matter, to the frail organization of a bird the benefit may be greater than we suppose. Plovers and moorhens both begin to lay before the end of March ; and they, too, are wakeful in the winter nights, as their voices testify. Long after dark we hear the plover's querulous cry from the ploughed field or watery meadow where its flock has settled to sleep, and the harsher croak of the moorhen comes up from the ponds and streams. Best fitted of all birds to face the winter are the owls, to whom night is day. Brown owls hoot as persistently in autumn and winter as in spring and summer ; and they, too, begin to lay their eggs in March or even February. The white owl's screech is heard less often ; but its pale plumage and habit of hunting in open places make it more visible. It drifts by the hedge in the winter dusk like a wreath of white fog. Though it glides past like the very spirit of silence, a few moments later its yell may echo down the valley. Then the sleep of the night is stirred by the voices of the more wakeful birds ; the moorhen calls again from the stream, and the plovers answer from the hillside.

Just as the night's sleep of many birds is light and broken, the longer and deeper slumber of hibernation varies in duration and intensity. Once the dormice have retreated into the winter nests hidden

in the hedge bottoms or among the roots of shrubs, they seem to sleep unbrokenly until spring. Hedge-hogs very seldom stir until spring, once they have rolled themselves into sleepy balls of spines in the midst of a deep drift of leaves in a dry ditch, or under the trailing boughs of a garden bush. Squirrels, on the other hand, move freely abroad at most times in winter; and in our mild climate their period of hibernation has wasted away to a few spells of sleep in cold weather. Wood-mice cannot be said to hibernate at all. They feast through the autumn and early winter nights on the stores of seeds which they accumulate in old birds' nests; and when they have consumed or wastefully scattered all these stores, they climb up the sloping hedgerow stems and gnaw away the bark of elder and other shrubs. The marks of their rows of delicate teeth can often be found on peeled stems in a frosty March, when supplies of all kinds have run low, and the frozen earth protects both the buried chrysalis and the garden bulb. At such times they seem to suffer severely from the lack of the dormouse's power to outsleep the storms and frosts. Yet they prove that their way of life is best by continuing to live and thrive; and the activity of such delicate and slender creatures is a triumph of vitality.

Nature in England hardly knows winter; in spite of bad weather which may come at any time, neither birds nor plants acknowledge any absolute gulf between autumn and spring. Yet in these few weeks in December the forces of growth and

decay seem at an equipoise, and almost at rest. Very soon after the New Year, the increased brightness about four o'clock on some clear afternoon makes it suddenly unmistakable that the year has turned in its path, and has its face set again towards summer. When once the afternoons begin to lighten, the sense of midwinter rest is gone; new life and purpose are astir in nature, and before the end of January the sharp spring call of the great titmouse warns the woodlands that the time of darkness is gone. But up to Christmastime, although there is already a gain of a minute or two in the afternoons since the middle of the month, the increase is too slight to make itself felt, and rest still broods upon them. Under the stillness of the tree-boughs interlacing their varied lines, the brief day fades forth without a struggle, seeming a mere gleam "between a sleep and a sleep." "The days do just open and shut," as an old cottage woman once said. Yet in the darkness of the woodlands there is no sense of oppression or gloom, where the year's long path is ending. While good-will holds sway at Christmastime round human hearths, no less surely over the world of nature without there dwells the spirit of peace.



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